



1998  
**Munitions Executive  
Summit**

19990202 003

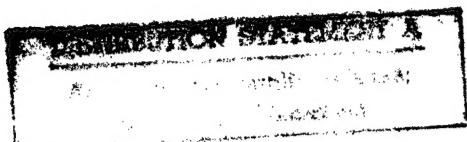
**Proceedings**

**September 14-16, 1998**

**The Ritz-Carlton, Palm Beach  
Manalapan, Florida**

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**Meeting # 865**



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MICHAEL B. FINNAGAN  
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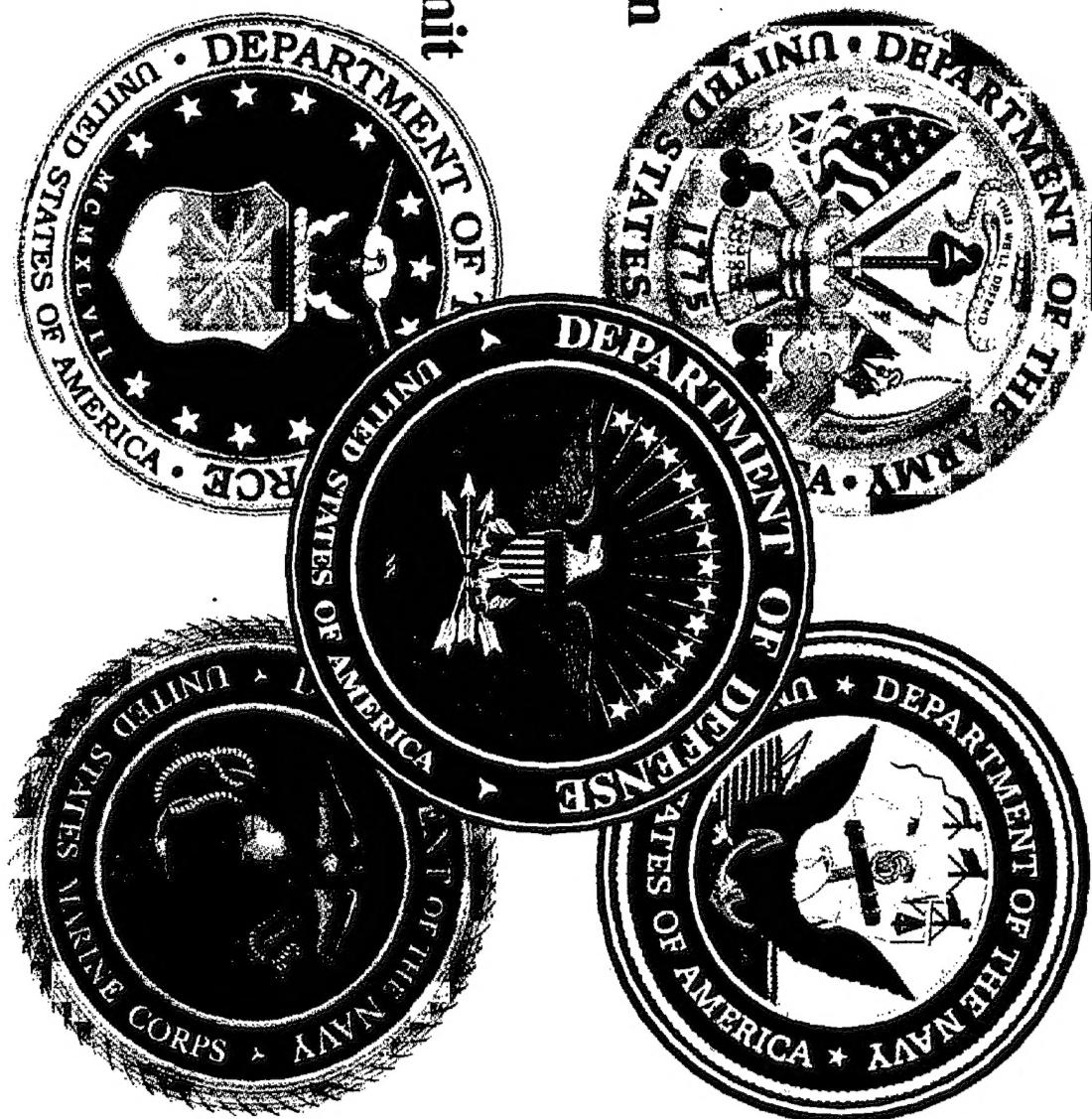
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Ammunition Organization  
Working IPT Briefing

to the

Munitions Executive Summit  
15 Sep 98



# Ground Rules

- Pacific Northwest National Laboratory study was a “launch point” only - not taken as “the” answer and not evaluated by the WIPT
- WIPT chartered to look at alternative organizational structures and address, to the extent possible, the degree of difficulty of implementing each
- WIPT to determine the rough order of magnitude **POTENTIAL** for savings in terms of personnel reductions and cost associated with personnel reductions
- WIPT built organizations on **vision** (ammo in 2003), **corporate philosophy**, **desired characteristics**, and **derived attributes**. Did not build organizations based on Quadrennial Defense Review personnel reductions currently under consideration
- WIPT provided resulting organizational constructs as nuclei for follow-on detailed reorganization efforts - schedules for implementation of each construct provides time for analyses of and modifications to existing processes and policies
- Use of WIPT effort by the Army is dependent on issues or questions to be solved and the goals of the Army reorganization efforts

# Voting Organizations (20)

- USD(A&T) Munitions\* • HQAMC (2)
- EDCA • DCSAMMO/SARD-ZCA\*
- HQDA/Secretariat (6)
  - DCSOPS\* • SARD-ZR\*
  - DCSLOG\* • SARD-ZS
  - PA&E\* • ASA (FM&C)\*
- PEO (4)
  - GCSS\*
  - TAC MISSILES
- OTHER SERVICES (3)
  - USN
  - USMC
  - USAF
- AVN
- AMD

\* = original WIPR member

# Overview

- Four constructs were produced that will accomplish the mission of improving ammunition management within the Army and DOD in varying degrees.
- These four constructs have been built and scored
- Ammunition Command
  - Establishes a DSA for Ammo with Ammo PMs Under a MSC
- PM/PEO Model w/Merged MSC
  - Joint Program Manager under a PEO (GCSS)
  - Merges TACOM and IOC
- Family Affair-Combat Systems
  - MACOM Restructure Merges PEO and AMC Organizations
  - Single Service
    - Ammo Organization If We Went to or Were Going to ONE Service
- Primary differences between constructs are:
  - Organization
  - Reductions associated with personnel and end-item cost
  - Ease and timing of implementation

# Construct Comparison

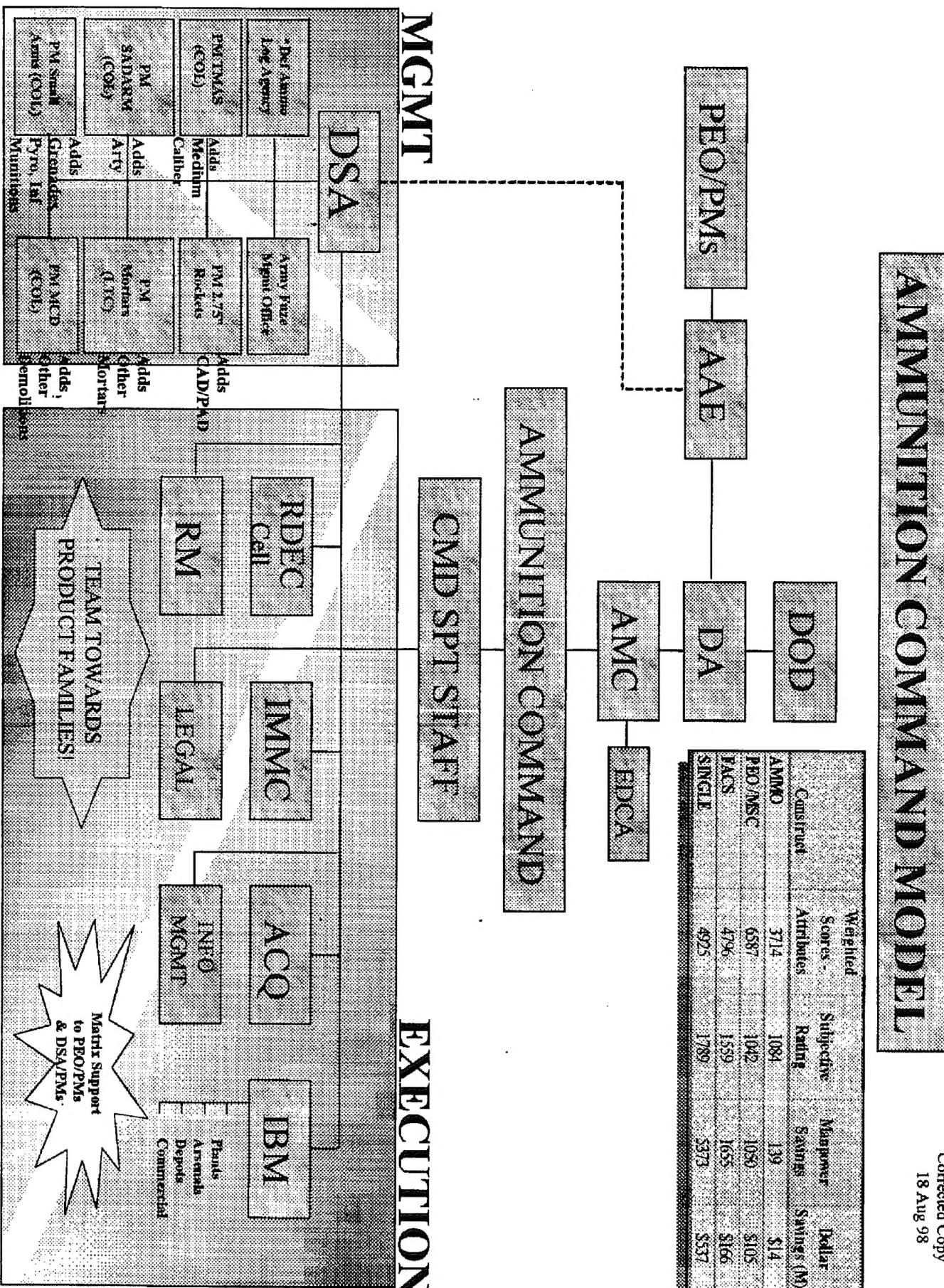
Construct	Weighted Scores - Subjective Attributes	Manpower Rating	Savings (\$M)	Dollar Savings (\$M)
AMMO QMD	3694	1084	169	\$14
PEO /MSC	6574	1042	1050	\$105
FAMILY AFFAIR	4811	1559	1655	\$166
Single Service	4925	1789	5373	\$537

## Notes:

- Attribute rating/weighted scores - **higher** score is better
- Subjective rating - lower score is better (addresses the difficulty of moving to a construct of this type)
- Majority of personnel savings in PEO/MSC model derived from merging of TACOM & IOC.
- **Manpower Reductions and Dollar Savings** based on:
  - \*FY97 TDAs
  - \*No incorporation of QDR
  - \*Top line only-No attempt at MEO analysis

## AMMUNITION COMMAND MODEL

Corrected Copy  
18 Aug 98



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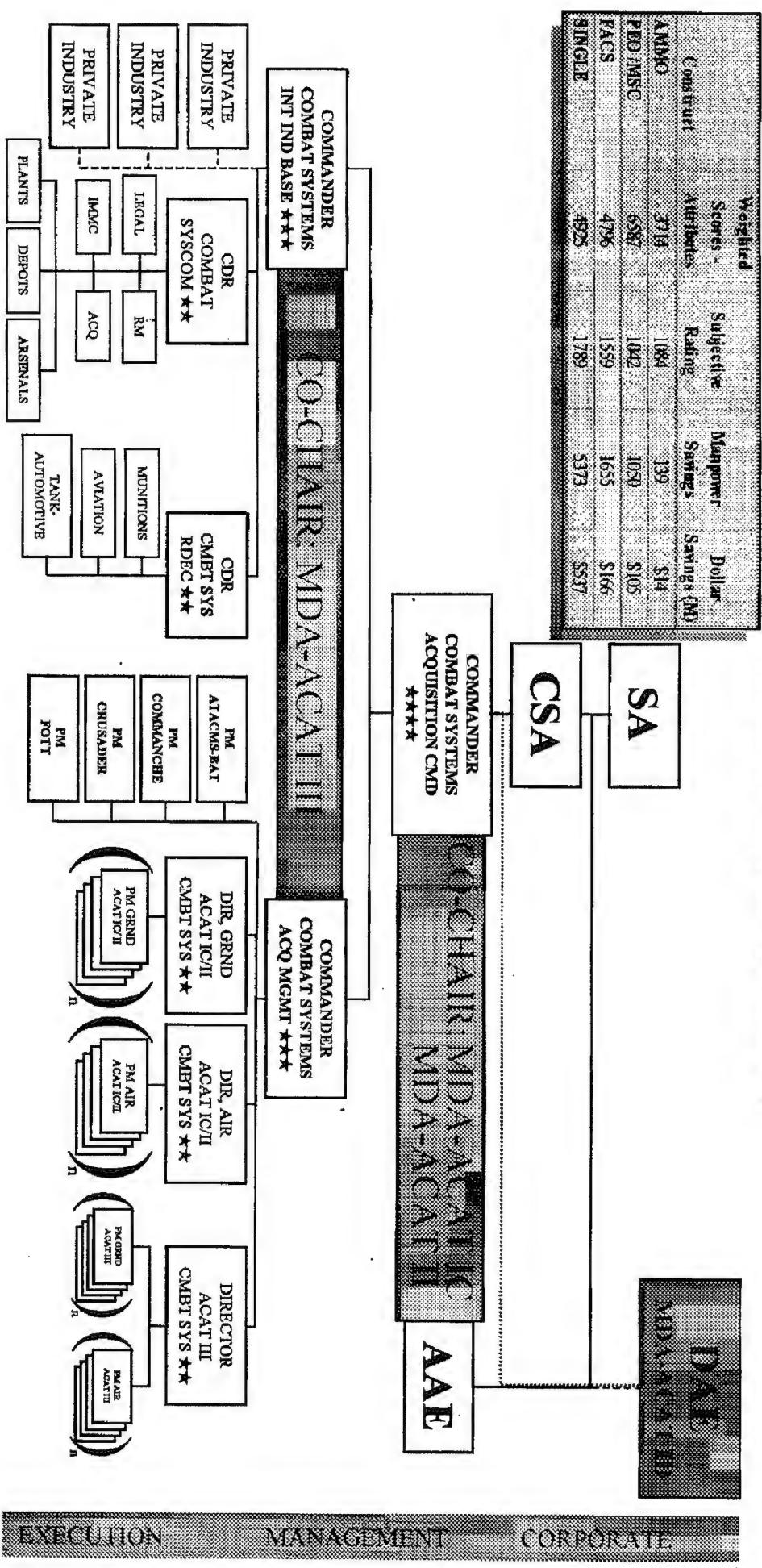
\* - To be merged with DAC

(PM's are Ammo Only)



# ARMY PARADIGM SHIFT

## (“Family Affair-Combat Systems”)



- Integrates all elements of the industrial base (Gov and private industry) for Army combat systems and ties them to the ‘Corporate Best Value’ decisions

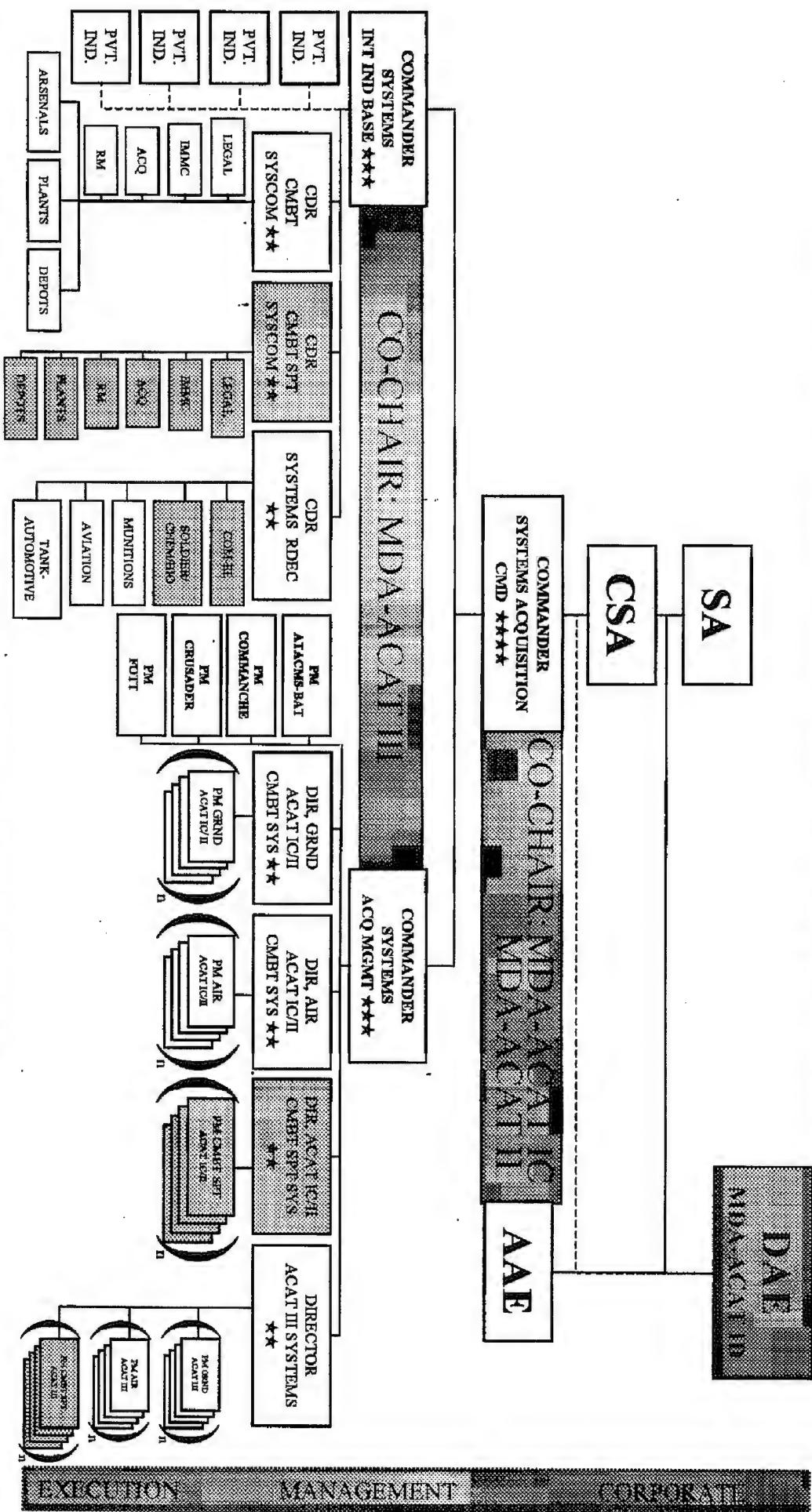
- Private sector utilized to the maximum (includes tech base, RDT&E, production, transportation, handling, storage, surveillance, and demil)
- SYSCOMs responsible for transportation, handling, storage, surveillance, and demil
- Single RDEC for combat systems includes platforms, launchers, and projectiles for system unique munitions and fill coordination with platforms for common systems—**A SYSTEM OF SYSTEMS APPROACH**

- Ensures full system integration (platform, launcher, and projectile) for system unique munitions and fill coordination with platforms for common systems—**A SYSTEM OF SYSTEMS APPROACH**
- Separates systems management from execution **VERTICALLY** (a continuum depending on function—the **CORPORATE FOCUS**) as well as **HORIZONTALLY**
- “Best Value” decisions made at the Corporate level with input from the management level which was developed at the execution level.

- Could be expanded into a total “Technology/Acquisition/Logistics Command” by adding:
  - Cdr, Combat Support SYSCOM:
  - Cdr, ACAT ICHI Comb Spt Systems under Dir, ACAT III Systems
  - Dir, ACAT ICHI Comb Spt Systems under Cdr, Systems Acq Mgmt; and
  - ACAT III Comt Spt Systems under Dir, ACAT III Systems.

Encl

# ARMY PARADIGM SHIFT ("Family Affair-Technology/Acquisition/Logistics Command")



1. Integrates all elements of the industrial base (Gov and private industry) for Army combat systems and ties them to the "Corporate Best Value" decisions
  - a. Private sector utilized to the maximum (includes tech base, RDT&E, production, transportation, handling, storage, surveillance, and demil)
  - b. SYSCOMs responsible for transportation, handling, storage, surveillance, and demil
  - c. Single RDEC for combat systems includes platforms, launchers, and projectiles
2. Ensures full system integration (platform, launcher, and projectile) for system unique munitions and full coordination with platforms for common systems-A SYSTEM OF SYSTEMS APPROACH
3. Separates systems management from execution VERTICALLY (a continuum depending on function-the CORPORATE FOCUS) as well as HORIZONTALLY
4. "Best Value" decisions made at the Corporate level with input from the management level which was developed at the execution level.
5. Keeps ACAT IC programs-AAE co-chairs with Cdr, CSAC (replaces VCSA as ASARC co-chair)

DOD PARADIGM SHIFT

## (“Single Service”)

SECDFF

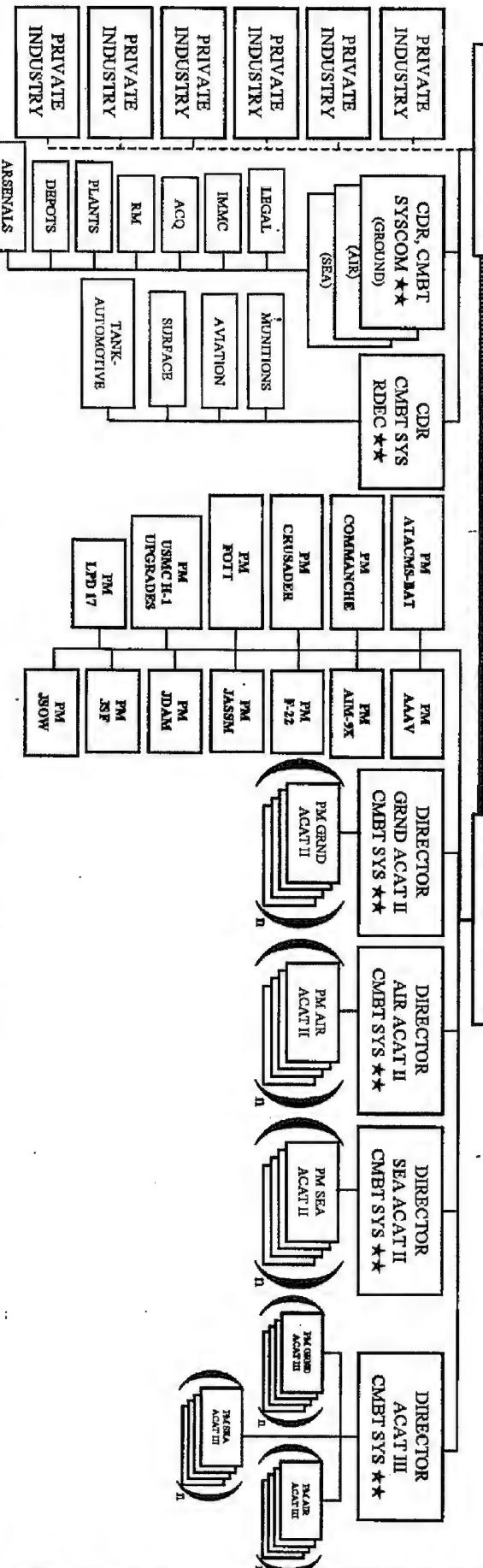
## SERV CHIEF (CJCS)

DAE

11DA-ACA 11

Construct	Scores	Subjective Rating	Manpower Savings	Baldr Savings (M)
AMMO	3714	1084	139	\$14
PEO MSC	6587	1042	490	\$105
FACS	4796	1559	1653	\$166
SINGLE	4925	1789	5373	\$537

COMMANDER  
COMBAT SYSTEMS  
INT IND BASE ★★  
INT MDA ACAT III  
COMMANDER  
COMBAT SYSTEMS  
ACQ MGMT ★★



1. Integrates all elements of the industrial base (Gov and private industry) for combat systems and ties them to the “Corporate Best Value” decisions
- a. Private sector utilized to the maximum (includes tech base, RDT&E, production, transportation, handling, storage, surveillance, and demil)
- b. SYCOMs responsible for transportation, handling, storage, surveillance, and demil
- c. Single RDEC for combat systems includes platforms, launchers, and munitions
2. Ensures full system integration (platform, launcher, and projectile) for system unique munitions and full coordination with platforms for common systems-A **SYSTEM OF SYSTEMS APPROACH**
3. Separates systems management from execution **VERTICALLY** (a continuum depending on function-the CORP RATE FOCUS) as well as **HORIZONTALLY**
4. “Best Value” decisions made at the Corporate level with input from the management level which was developed at the execution level.

# WIPT ORGANIZATION COMMENTS

ORGANIZATION	CONSTRUCT	AMMO CMD	PEO/PM w/ MERGED MSC	FACSV/ TALCOM	SINGLE SERVICE	OTHER
OSD/OTHER SERVICES				X	investigate	
USD (A&T)			X	investigate		
EDCA			X	investigate		
U.S. NAVY	ok	ok	ok	ok		
HQDA						
ASA (FM&C)			X			
SARD-ZS		X	serious look			
DCSOPS		X				
PA&E		X				
PEOs		X				
AMD		X				
AVN		X				
GCSS		X				
TACTICAL MISSILES		X				
AMC		X				
DCSAMMO		X				
DCSRDA		X (w/mods)				
AMCOM		X				
IOC	X					
TACOM						
INDUSTRY					X	
ALLIANT		X (leads)	X (follows)			
ARMTEC	X					
<b>TOTAL</b>		<b>13</b>		<b>7</b>	<b>1</b>	<b>1</b>

STAFF DRAFT

# COMPARISON OF CONSTRUCTS

CONSIDERATION	CONSTRUCT	AMMUNITION COMMAND	PEO/PM w/ MERGED MSC	FACS/ TALCOM	SINGLE SERVICE
MANAGES ALL ACAT LEVELS	--- YES --- NO	--- X --- X	--- X --- X	--- X --- X	--- X --- X
LEVEL OF PAA APPROPRIATION MANAGER	--- MSC/PEO --- MACOM DA/DoD	--- X --- X	--- X --- X	--- X --- X	--- X --- X
MUNITIONS MANAGEMENT	--- AMMO MISSILES	--- X --- X	--- X --- X	--- X --- X	--- X --- X
INTEGRATED SYSTEMS MANAGEMENT	--- AMMO LAUNCHER PLATFORM	--- X --- X	--- X --- X	--- X --- X	--- X --- X
INTEGRATES MUNITIONS INDUSTRIAL BASE	COORDINATING OFFICE	--- X --- X	--- X --- X	--- X --- X	--- X --- X
via INTEGRATES TECH BASE	INTERNAL	--- X --- X	--- X --- X	--- X --- X	--- X --- X
SEPARATES MGMT & EXEC	HORIZONTALLY VERTICALLY	--- X --- X	--- X --- X	--- X --- X	--- X --- X
CONSTRUCT APPROVAL AUTHORITY	--- AMC --- DA OSD	--- X --- X --- X	--- X --- X --- X	--- X --- X ---	---
LEVEL OF CORPORATE BEST VALUE	--- MSC/PEO --- DA DoD	--- X --- X --- X			
INTEGRATES REQUIREMENTS W/LIFE CYCLE MANAGEMENT	--- YES --- NO	---	---	---	---
TIME TO EXECUTE	IN YEARS	2	3	4	8

# Graybeard Comments

- Each construct addresses a different problem. A fundamental question becomes, do we address ammunition only or the larger reorganization task facing AMC?
- Separating guns from ammo is a “fatal flaw”. Integration problems have arisen in sustainment as well as RDT&E and production.
- AMC PMs are second class citizens; PEO PMs make it to BG (criticizes both the Ammunition Command and the PEO/PM w/Merged MSC constructs).
- Procurement drives the industrial base which should be an issue for the uniformed Service and not the Secretariat (criticizes the PEO/PM w/Merged MSC Construct).
- Answering the critical question, “where will acquisition be in the Army organization,” will shape AMC’s future. Combining Technology, Acquisition, and Logistics in a single organization may be a good strategy.
- The PEO/PM w/Merged MSC construct is seen only as an incremental step; something broader will be required for a post 2002 AMC; maybe TALCOM, maybe something different.
- FACS and TALCOM may provide a way (or a springboard) forward.
- Merging AMC and the PEOs is probably not as dramatic a reorganization move from the Army perspective as it would appear. While it [TALCOM] would be difficult politically to pull off, it would probably generate some good press for the Army just by proposing it.
- Congressional constraints will limit the Army’s ability to close or privatize plants, arsenals, and depots.
- Constructs that further migrate responsibilities to Joint Agencies or the Secretariat should be resisted (specifically Single Service).
- Strong roles and responsibilities on the SARDAs side are defining characteristics of the organizational structure that would have to be clearly defined.
- An organizational change within the Army will not solve industry’s problems (funding and foreign competition). However, placing the Appropriations Director at the highest level possible would assist.

# BUSINESS CASE IPT

Jean L. Ligeno  
Industrial Operations  
Command  
DSN 793-6894

RELEVANT

READY

# TEAM COMPOSITION

IOC

ARDEC

SARDA

IPT

SELECTED  
PMs

DCS AMMO

Tom McWilliams  
TACOM-ARDEC  
Vice Chair

Jean Ligemo  
IOC Chair

RELEVANT

READY

# BUSINESS CASE IPT BACKGROUND

## PNNL STUDY

Assess current munitions base

Ammunition Production Base is:

- Oversized
- Inflexible
- Obsolete

RELEVANT

READY

# BACKGROUND

(continued)

## GEN Wilson e-mail GEN Reimer - 28 Jul 97

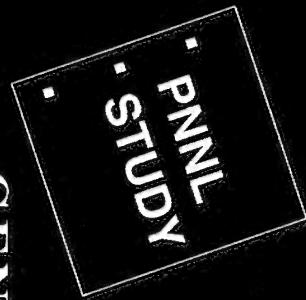
- Agree in Principle with Recommendations
- Manage base through competition vs. workloading
- Commercialize organic base
- Smart acquisition practice - long term, consolidation, link peacetime/replenishment
- Consolidate munitions management

**2 or 3 prototype plants**

**2 IPTs**

RELEVANT

READY



# 2 PRONG APPROACH

AMMUNITION  
FAMILY BUSINESS  
CASES

Integration

Prototype  
Plants

RELEVANT

READY

# AMMUNITION FAMILY BUSINESS CASES

*Institutionalize Process*

MORTARS

PM - LEAD

IOC - Requirements

- Replenishment

ARTILLERY

TANK/

MED CAL

SMALL

CAL

MINES

Replenishment Options  
Multi-Year  
Consolidated Buys  
Competition

*Component Integration*

**No Cookie Cutter Approach**

RELEVANT

READY

# PROTOTYPE PLANTS PRELIMINARY REVIEW

XMAT  
Active  
(HOLSTON)

Louisiana  
Inactive

Scranton  
Inactive

On-going  
Actions

Reviewed Against Site  
Manager Attributes of the  
Study. XMAT met 14 out of  
16 Attributes. Louisiana met  
12 and Scranton 10.

RELEVANT

PREPARED  
READY

# PHASED SITE

## MANAGER CONCEPT

Competitive Facility Use Contract

Size Base

Profit Stabilization Threshold

Site Manager

Commercialization

Lease

Risk Minimized

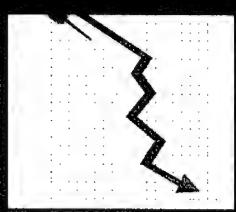
Commercialization

Sale

Privatization

RELEVANT

RELENTLESSLY  
READY



# Actual Cases

FY 98/99

FY 98/00

FY 02/03

FY 03/05

Small Caliber Competition

Metal Parts

Load, Assemble & Pack

Propellant

RELEVANT

RELEVANT  
READY

# PRODUCTION BASE ASSESSMENT

## IMPLEMENTATION PLANNING SCHEDULE

### Ammo Family

FY97	FY98	FY99	FY00	FY01	FY02	FY 03
1	2	3	4	1	2	3
4	1	2	3	4	1	2
					3	4

Mortars

Artillery

Tank/Med Caliber

Small Cal

Mines

### GOCO Operation

Small Cal

Metal Parts

LAP

Propellants

Component Integration

Overarching Authority to maintain healthy base

### Input to Teams

Continuous Feedback of Lessons Learned &

Strategy Adjustment

READY

# ITEM 1

**Manage the base through competitive acquisition rather than direct workloading of plants.**

**ACTION:** Increase Competition

**EXAMPLES:** IOC Plan to be out of GOCO workloading

by 2001

XMAT

Mortars

Tank Ammo

Ammunition Family Business Case

Longhorn

RELEVANT

GOING WITH  
READY

## ITEM 2

**Commercialize the organic base: Make it work for us.**

**ACTION:** Selected prototypes.

**EXAMPLES:** XMAT

Scranton

Louisiana

Proposed schedule for GOCO

Competitions to size base.

Small Cal (LCAAAP) Competition team established.

5-Excess Plants

- Badger, Indiana, Kansas (partial), Sunflower, Volunteer



## ITEM 3

**Stabilize the market through smart acquisition practices - longer-term consolidated procurements - link peacetime and replenishment requirements contractually.**

**ACTION:** Started Ammunition Family Business Case Sub-IPTs  
Implementing Acquisition Reform  
Developed methodology to incorporate replenishment into Best Value competitive contracts

**EXAMPLES:** Procurement Consolidation - Most med cal 25/30mm

Tank Training Ammo

M865/M831

Grenade Fuzes M213/M228

120mm Mortar

Multiple Year Procurements - (Rule rather than exception)

- Med cal (5 yrs)
- Tank Training FY 95-98/FY 99-03
- M550 Fuze
- Hand Grenade Fuzes M213/M228
- 120mm Mortar

RELEVANT

READY

# POLICY

## SARDÀ 98-1

- Manage ammunition using DOD's life-cycle acquisition process.
- Use acquisition reform initiatives to stabilize the business environment and provide incentives for private investment in the production base.



# POLICY SARDAA 98-1 (CONTINUED)

- Rely on the private sector to create and sustain ammunition production assets in response to production and replenishment contracts.
- To the maximum extent feasible, transition government-owned ammunition production assets to the private sector while preserving the ability to conduct explosives handling operations safely.

RELEVANT  
REVIEWED  
READY

# CONCLUSIONS

1. Developed timeline for completion of Ammunition Family Business Cases and actual ammunition plant cases.
2. PNNL recommendations will work for some families of ammunition and plants but cannot be a cookie cutter approach.
3. Site Manager Concept needs to be a phased approach.
4. Army initiatives already underway match PNNL recommendations.
5. IPT will be dissolved and monitoring of the planned actions will be accomplished by DCS Ammo.

RELEVANT

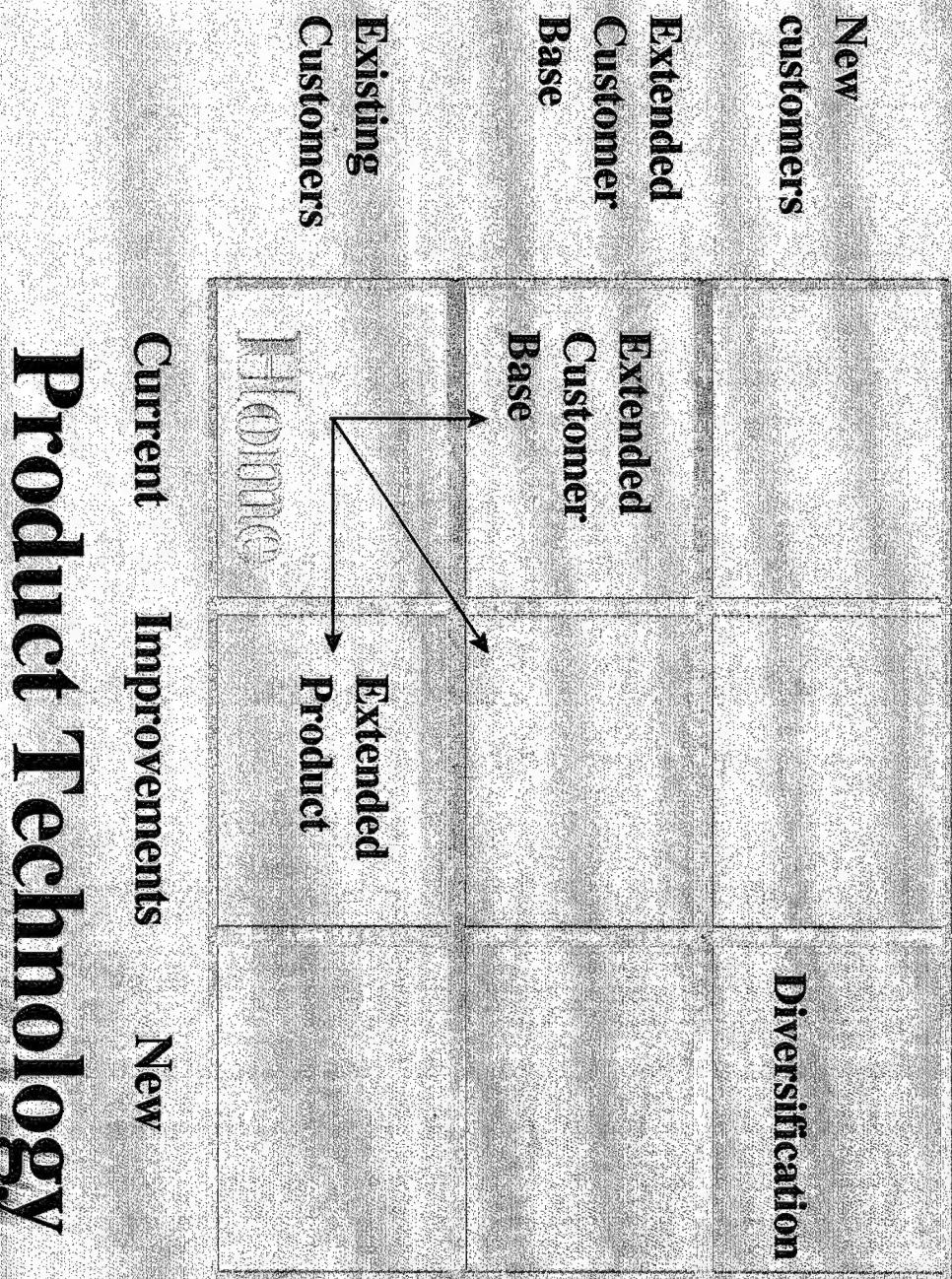
RESPONSIVE  
READY

SEIT BYTES

# Munitions Executive Summit

- 50 Years of base adjustments
  - WWII
  - Vietnam
- 1998 - Talley Defense Systems
- Sermon

# BUSINESS SPECTRUM



# **Business Spectrum**

- **Products:** Hardware, Warranty, Service, Quality, Rate of Technological Change, Regulations, *Product Liability*
- **People:** Skills, Wages, Benefits, Education
- **Plant:** Environmental, Location, Transportation
- **Market:** Competition, Brand Loyalty, Sales Methods, Credit policies, *Buying Motivation*

## Consumer Motivation

Aren't you glad you  
use Dial...don't you  
wish everyone did?'



Wish everyone did?'

use Dial...don't you

# 1940's Presidential Image

PEOPLE

**PRESIDENT AND MRS. ROOSEVELT PLAY WITH FALA, READ AND RELAX ON LONG WEEKEND**



To Hyde Park have worked well. Mr. and Mrs. Howorth, lake authorities of Chicago, April 26, write: "We thought you might be interested in the fact that one of the last visitors of the lake, last Saturday, March 25, was a large, fat, brown trout weighing 10 lbs. 10 ozs. and 30 inches long. The fish was caught by a man named Mr. John H. Williams, of Chicago, who had fished the lake for 30 years."

# 1950's Presidential Image

LIFE

THE TRUMAN MI  
BASIS FOR CONTROVERSIAL C  
FLORIDA '56 TUES. 10



MR. TRUMAN TODAY.  
STILL CAMPAIGNING

# Shipbuilding Miracle - Kaiser

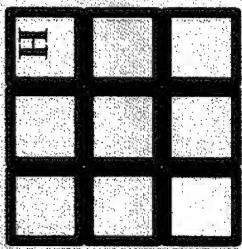
## GRAVEYARD OF SHIPS

LAST WAR'S HUNDRED SHIPS



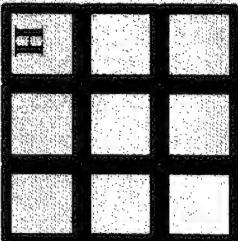
\*Liberty ships  
\*Escort carriers

# Kaiser's Lament



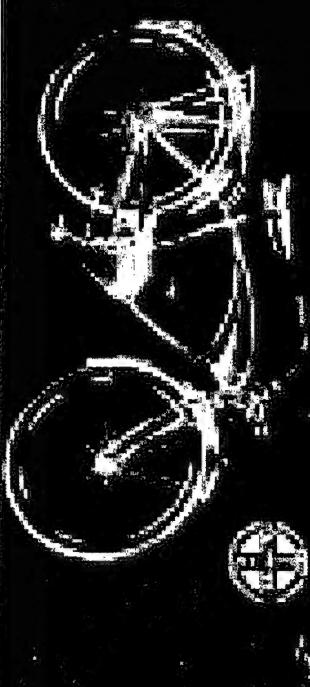
“I knew it would be risky, but I never expected my \$400 million to disappear into the automotive pond without even a ripple.”

J.C. Higgins



Schwinn Built Bicycles  
GUARANTEED FOR LIFE

FREE! Movie Catalog



*Schwinn* Built Bicycles  
GUARANTEED FOR LIFE



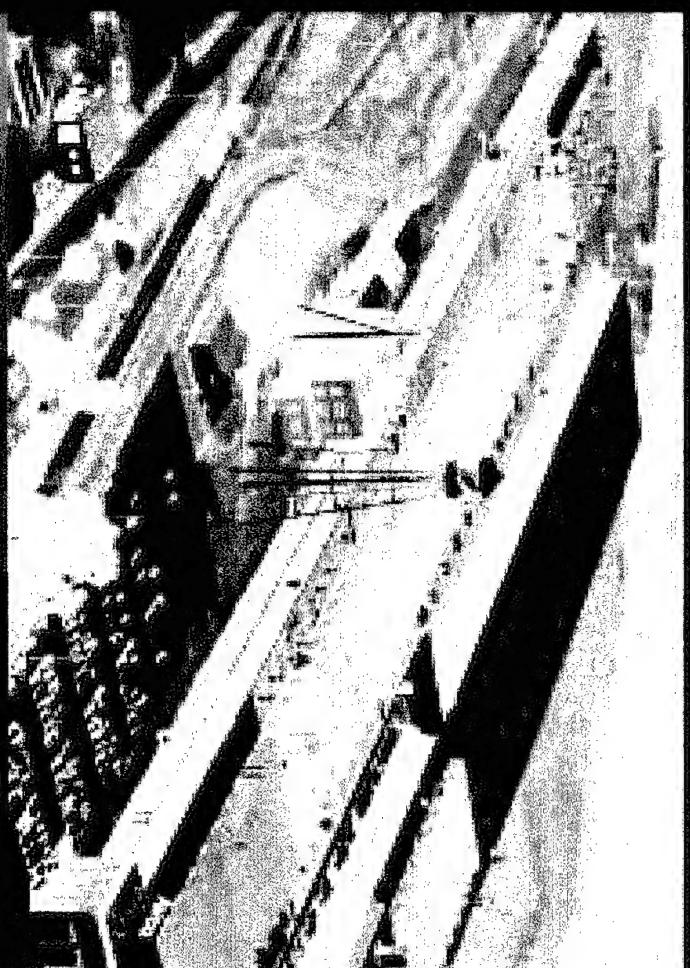
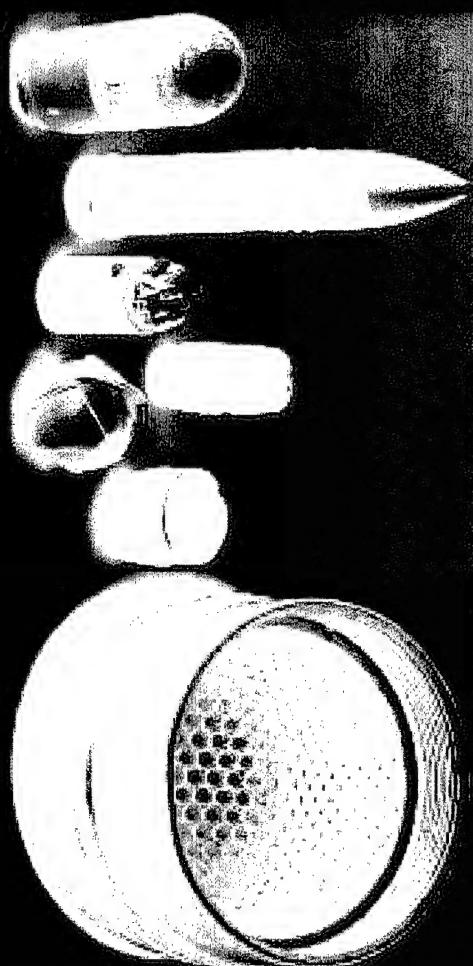
Movie Catalog

JC Higgins bikes never made Schwinn sweat!

# Vietnam ERA

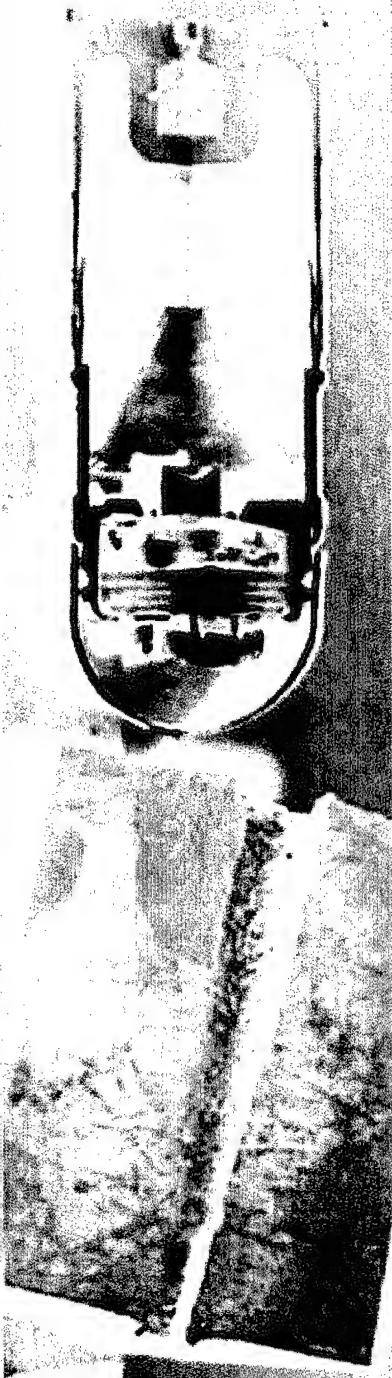


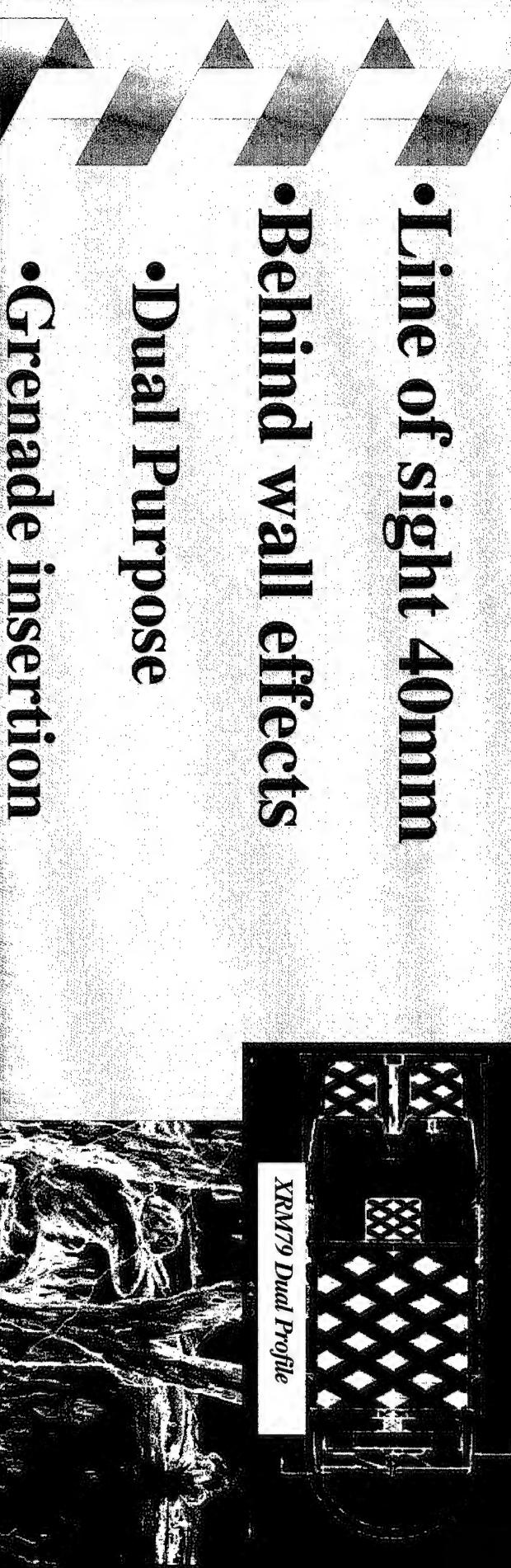
AMCO  
ORDNANCE DIVISION



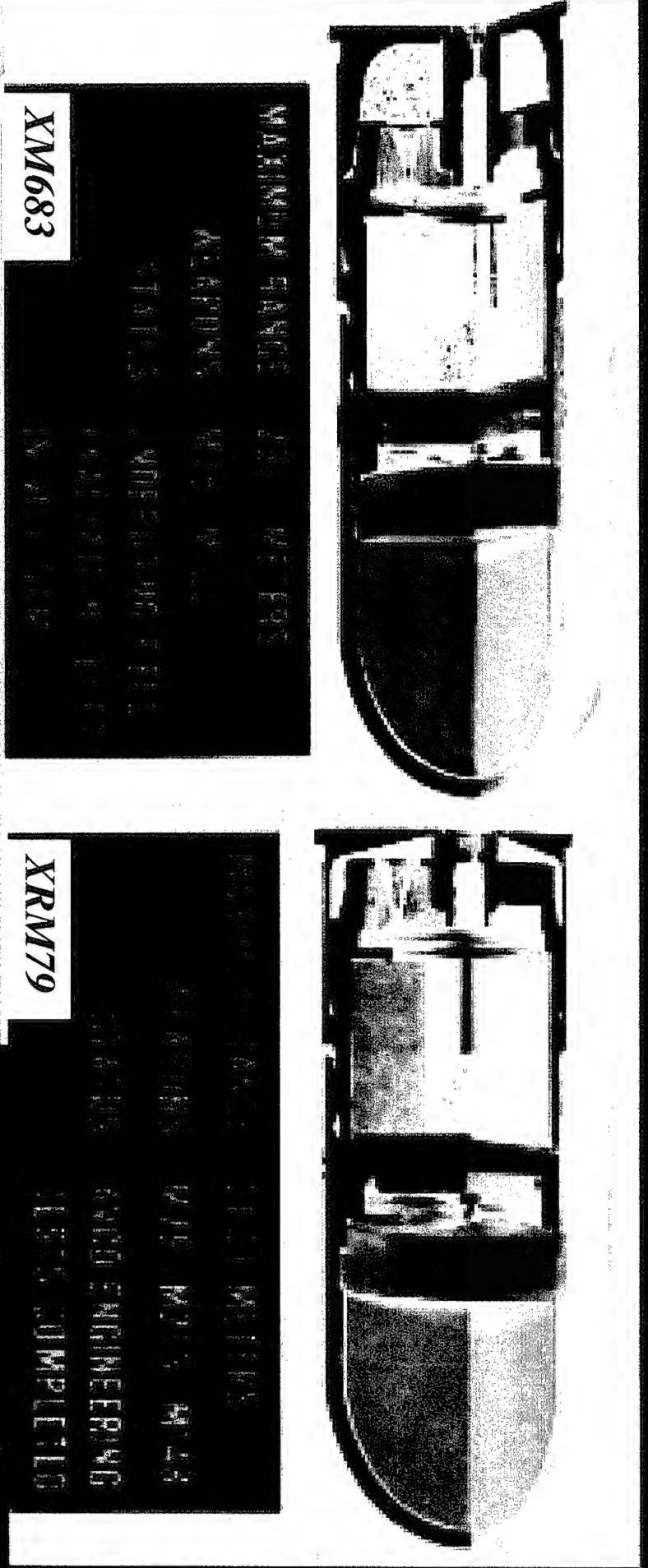
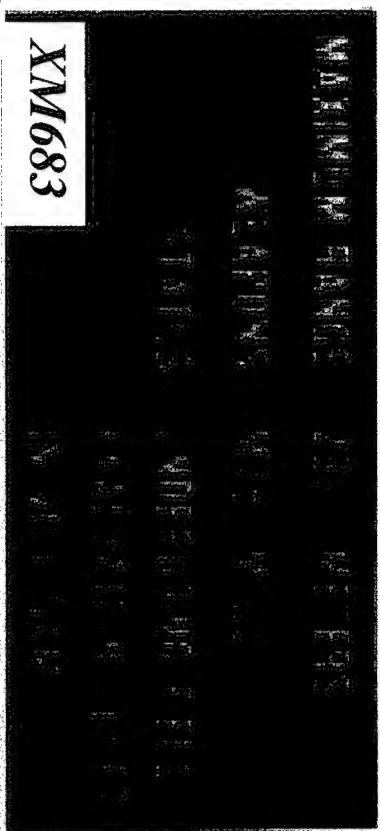
# AVCO Developments

- Cost effective, "Cavitating" fragments
- ICM munitions
- 40mm DP ammo - first used in Desert Storm
- M42/M77 grenade - "Steel rain"



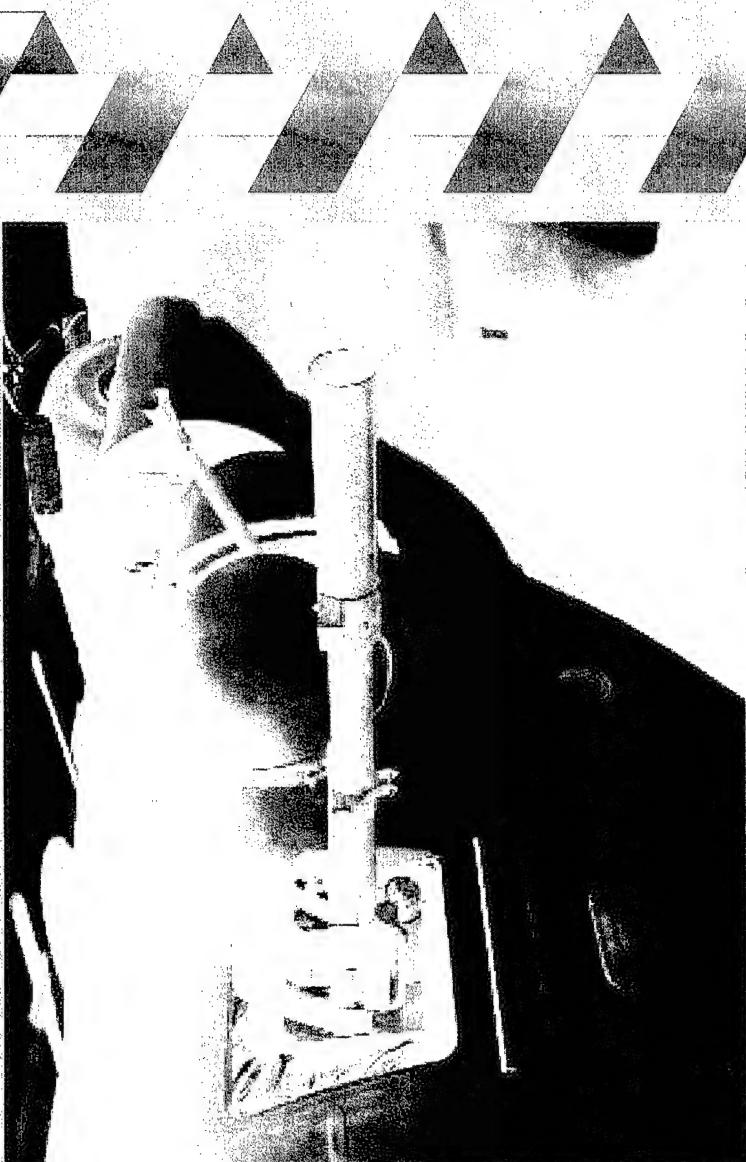
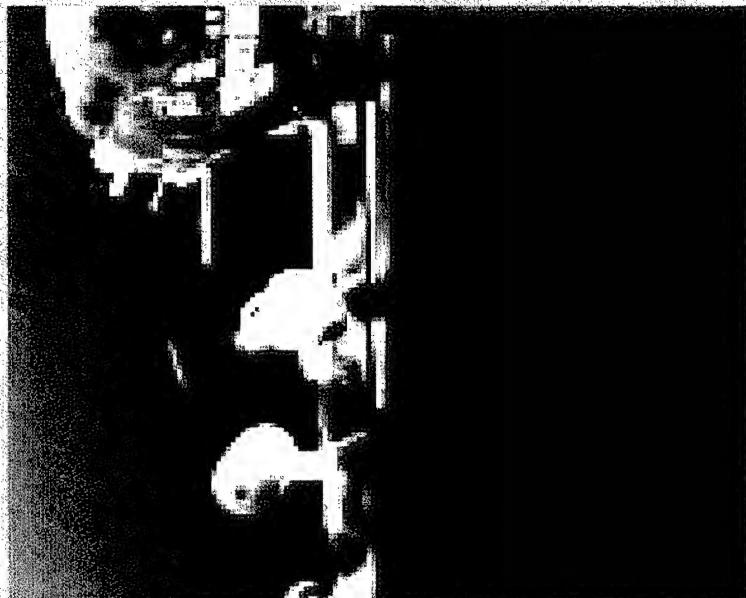


- Line of sight 40mm
- Behind wall effects
- Dual Purpose
- Grenade insertion

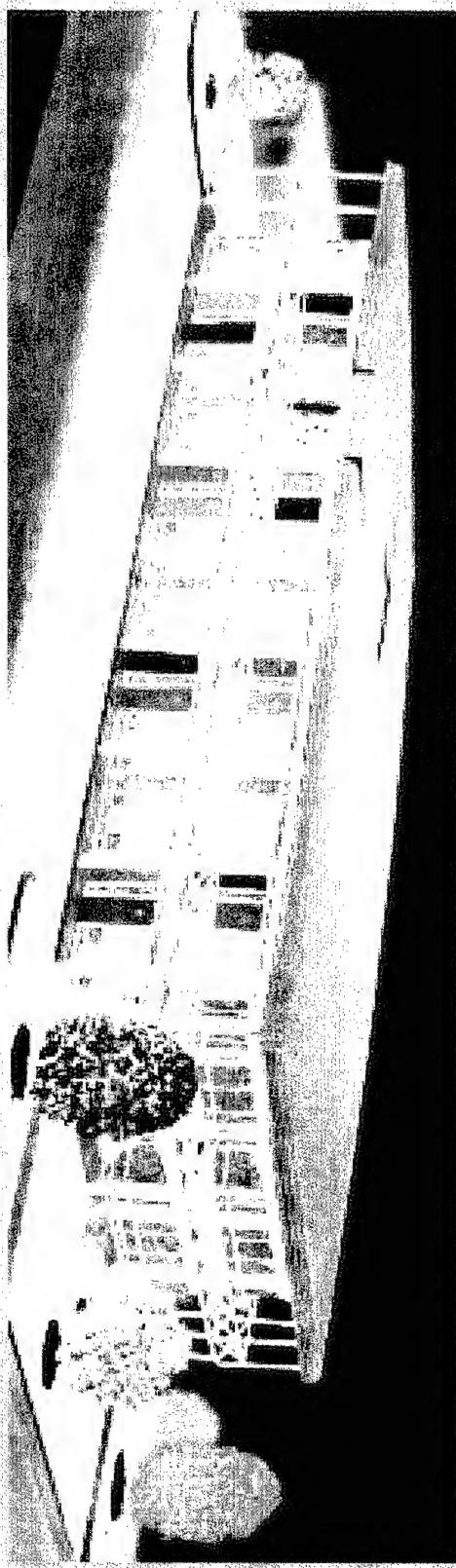
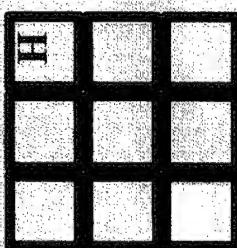


## Other AVCO Contributions

- Initial mounts of both 40mm Bofors and 105mm on USAF gunships



# Modular Motel units



- Dedicated 25% of factory space
- Built four motels
- Hidden costs killed program

# Consumer Product Lure

- Early TV maker - Competition victim
- AVCO Embassy motion pictures stockpile
- Cartrivision Patent License
  - Three head tape playback system
- 200,000 sq. ft. NASA level "Clean room"
- AVCO isolated from marketing & sales



*(Roslyn Gishard  
Marketing Director, AVCO)*

# Cartivision

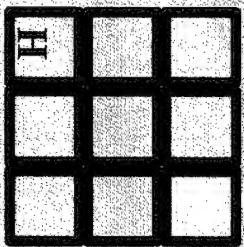


**Cartivision**

**Cartivision** A unique way of looking at things.

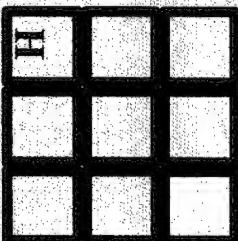


**Cartivision**



# Results

- 2800 units manufactured
- Engineering changes (tape head problems)
- Sears - Chicago first outlet
- Sales training cancelled
- Sold to consumers - 0
- Died in Fall 1972

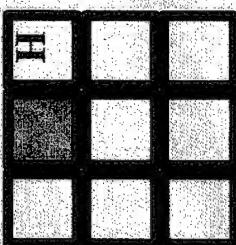


# AVCO Precision Products

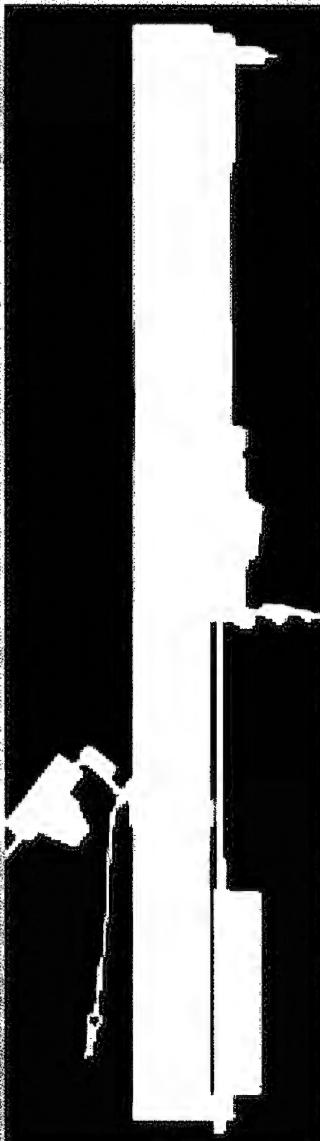
- Shutdown announced January 1973
- Closed by Jan 1974
- 40mm rocket boosted, ICM self-destruct, other ordnance development stopped

NI Industries

**Brockton, MA**



- Source for M72 launchers
- Converted at end of Vietnam
- NI Thermador (Luxury kitchen appliances)
  - Exhaust Systems
  - Compactors
- Products eventually went to Mexico

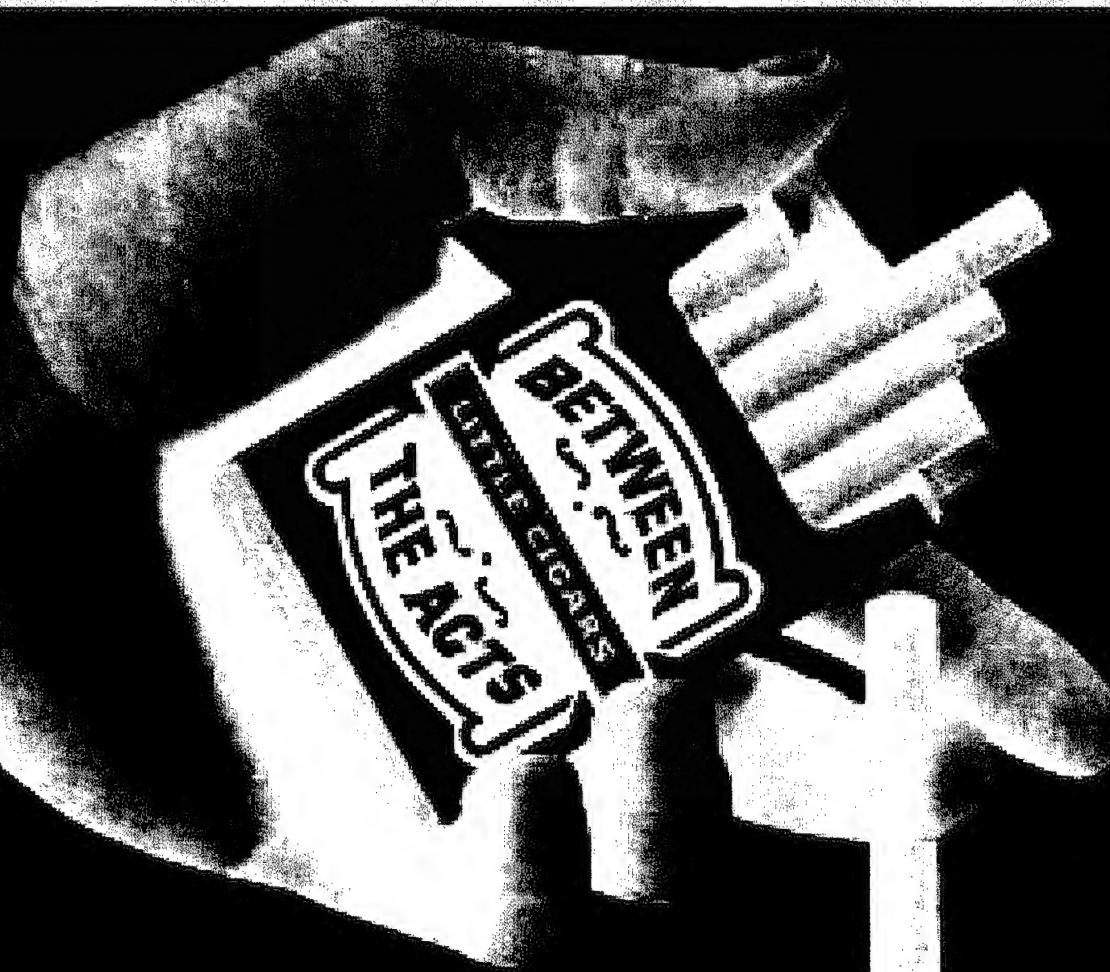


# Post Vietnam Changes

- US Auto market penetration
- Erosion of US national hard goods base
- World market awakens (Mexico \$10/day),  
China, Eastern Europe, PACRIM

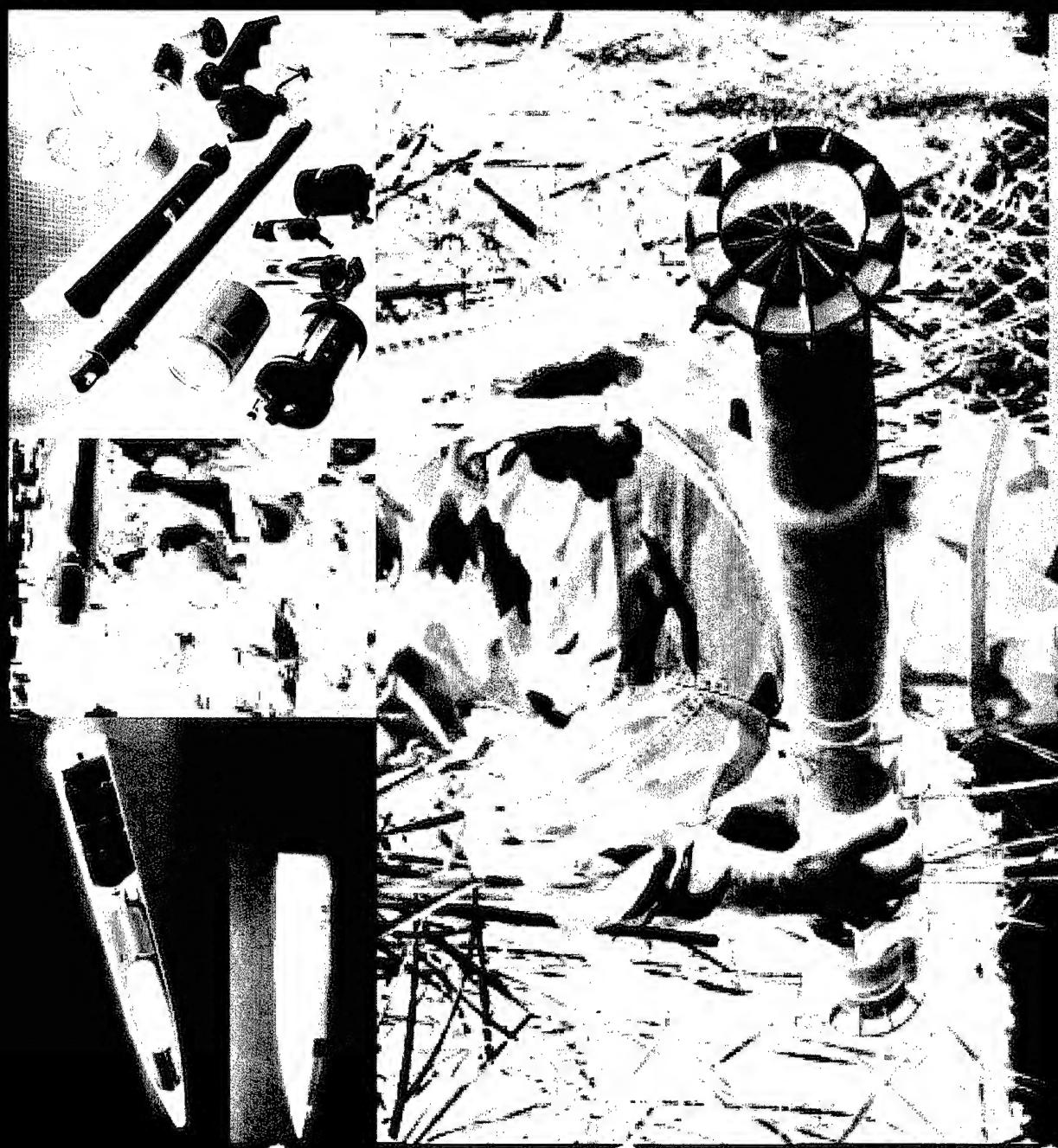
# BETWEEN THE ACTS

LITTLE CIGARS



you  
need not  
inhale  
to enjoy  
Puff  
lightly...

SMAW-  
D/BDM



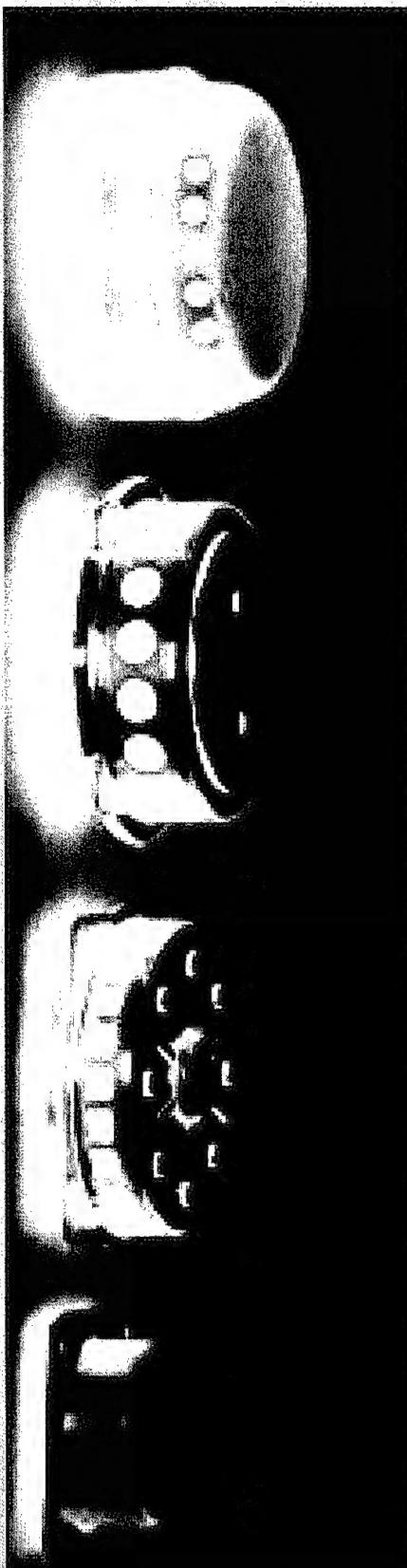
# Talley Commercial Programs

- Auto airbag pioneer (Late 1960's)
- Transferred airbag technology to defense products (munitions dispersion)
- Escape slide inflators
- Fire suppression

# Talley Airbag Milestones

- Invented Azide propellants
- Talley Market Share 1989 100% Ford driver; 80% GM driver; & 100% Honda Driver
- 1989 - Sale of airbag to TRW (\$ Hundreds of millions in sale & royalties)

# Charts showing inflator progression



Early 70s

Late 70s

Late 80s Present

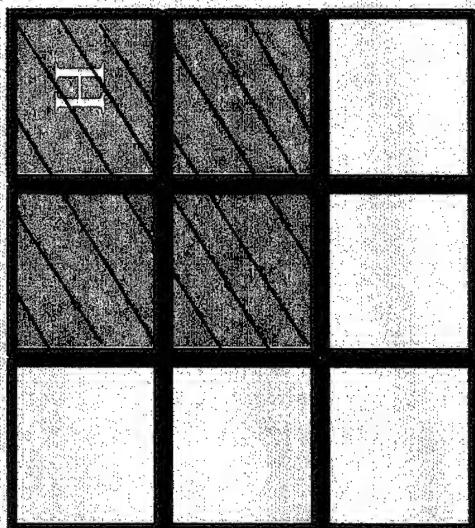
## Post TRW Era (1994)

- Talley develops non-azide inflator
  - Smaller, simpler
  - Less costly
  - Tighter performance
- Re-entered maturing market
- Formed Delphi (GM) JV
- Achieved re-entry in four years

# Talley Template

- Internal diversification
- Dual use propellant capability
- Technology development (Engineering, Propellant)
- Manufacturing advances
- Quality (CP2, ISO, QS)
- Marketing & sales

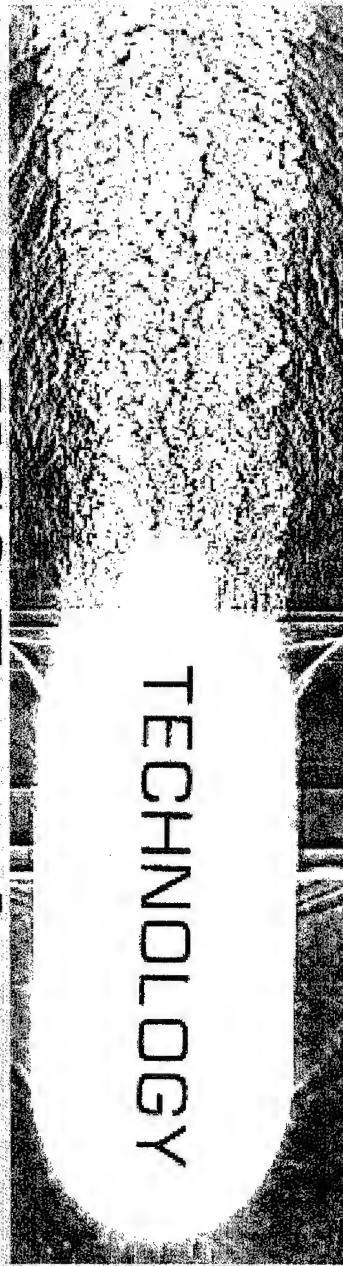
Markets



Success lies in extending...

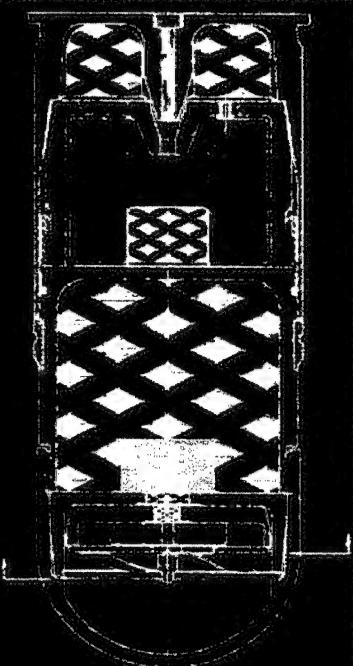
# What does the Army lose when the base is gone or too weak?

## TECHNOLOGY



### AVCO Examples:

- Rocket ammo technology
- Grenade insertion
- Time to fire fuze
- Behind target effects
- Dual Purpose rounds
- ICM self destruction



# **Most Probable Threat Reality [MPTR]**

- MPTR is no mystery
  - 1. OPTEMPO deployments (OOTW-Close combat, & Artillery fan fire support
  - 2. Missile defense
  - 3. Terrorism
  - 4. Longer term needs (Countering Peer battlefield adversaries)

# Balance

- Situational awareness (SA) kills nothing
- SA supported by effective weapons and ammunition mean capable defense
- *Balance* among SA, Leap ahead & effective close combat and fire support fan lacking
- *Too much* leap ahead is unaffordable
- Close combat technology base unsupported

# Challenges For Army & Industry

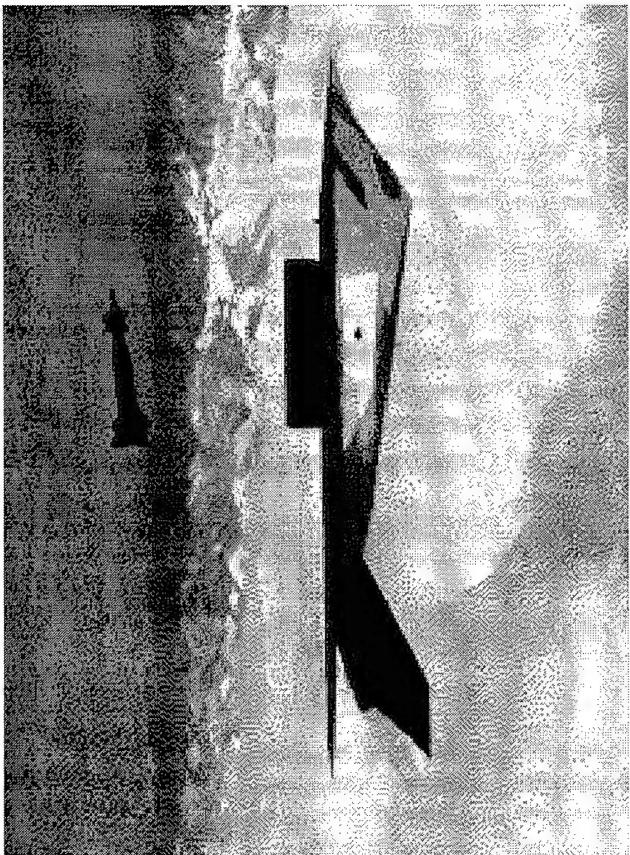
- There will be no defense without a balanced industrial base
- Technology moves forward, even if America ignores it
- DoD / Army have stake in the defense industry freefall

# signs



# Summary & Sermon

- Insufficient hard goods industrial base means insufficient combat power.
- Restore spending balance (SA/Leap ahead & killing systems)
- Forge hard goods base preservation policy - suddenly



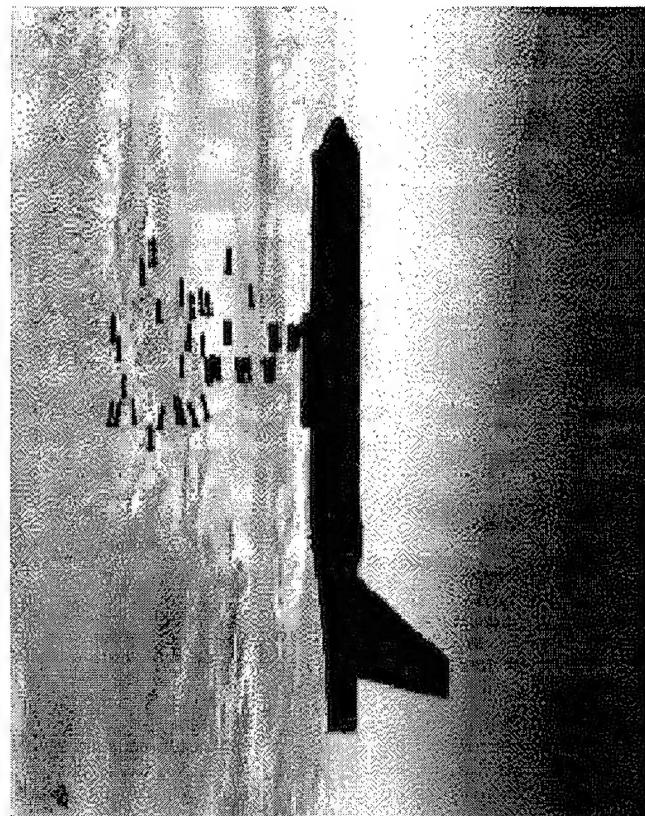
Col Paul Brandenburg, USAF  
Deputy Executive Director



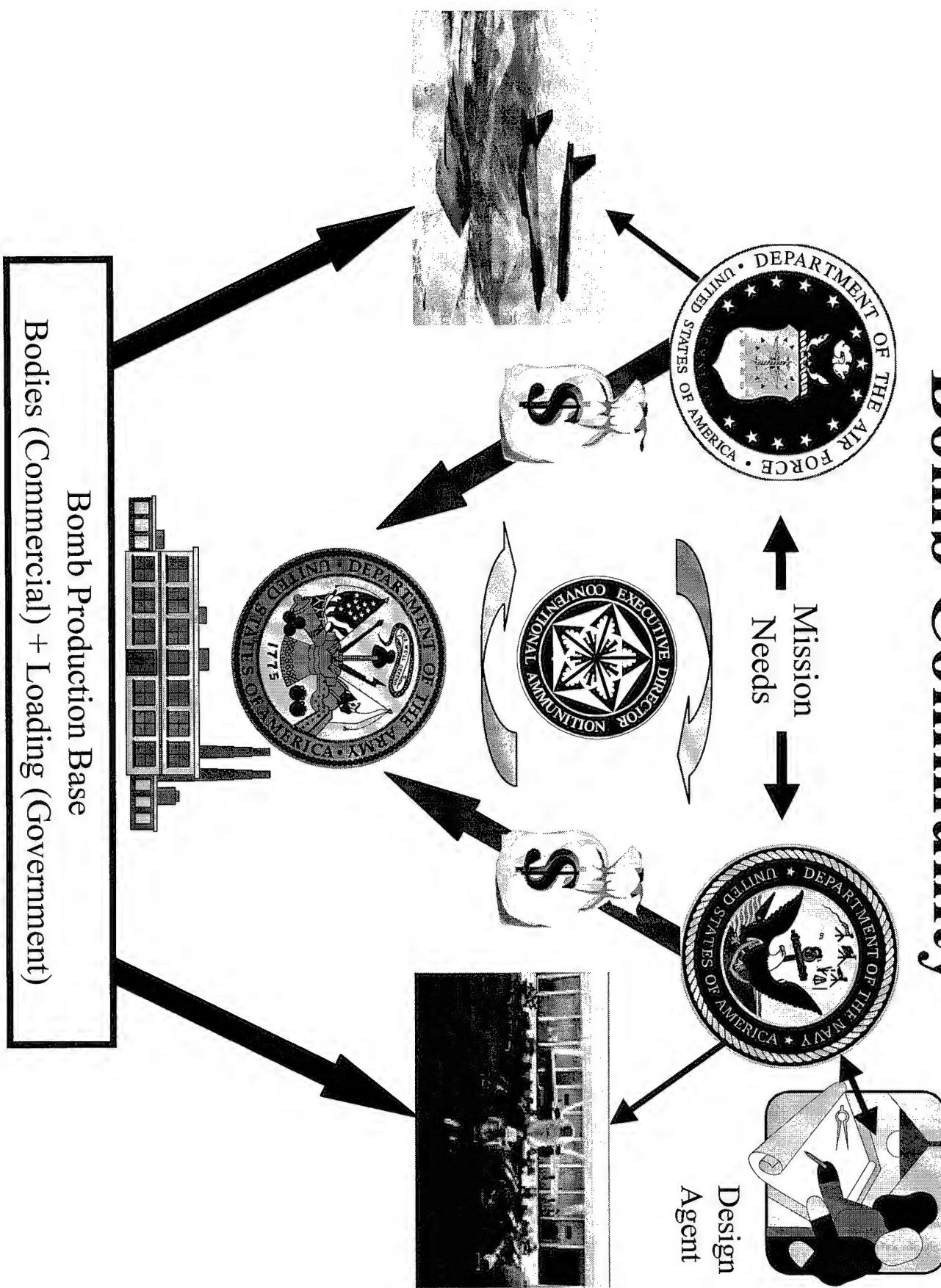
# Introducing Cast Ductile Iron Bombs

## A Joint Perspective

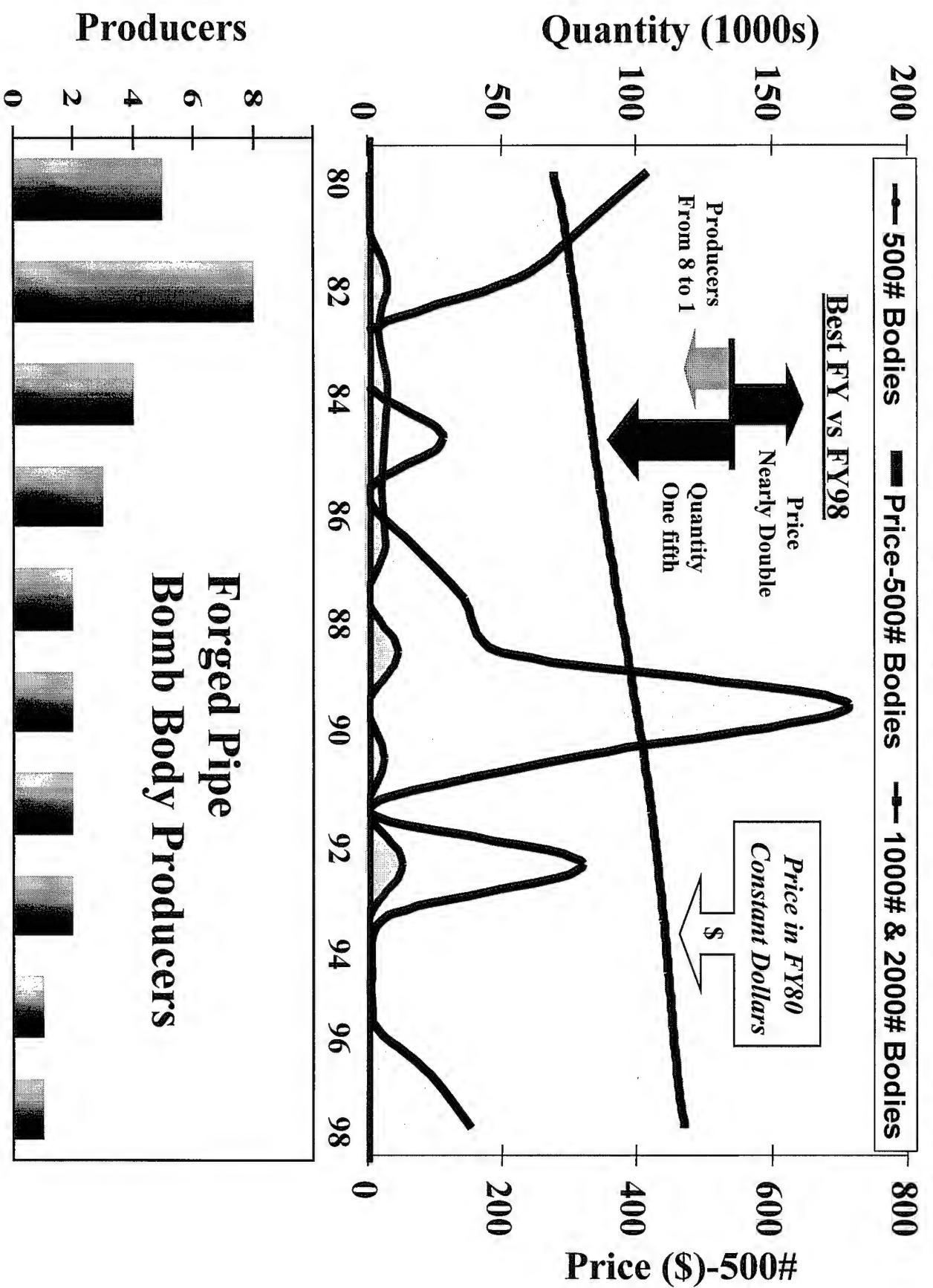
15 September 1998

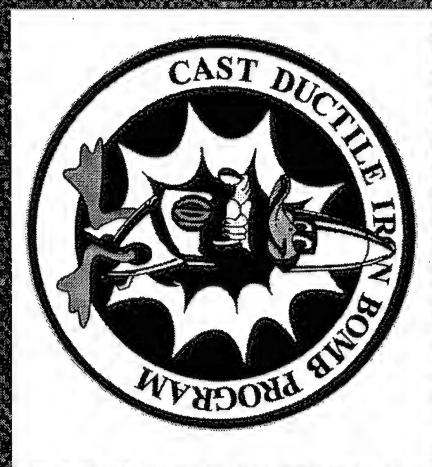


# Bomb Community



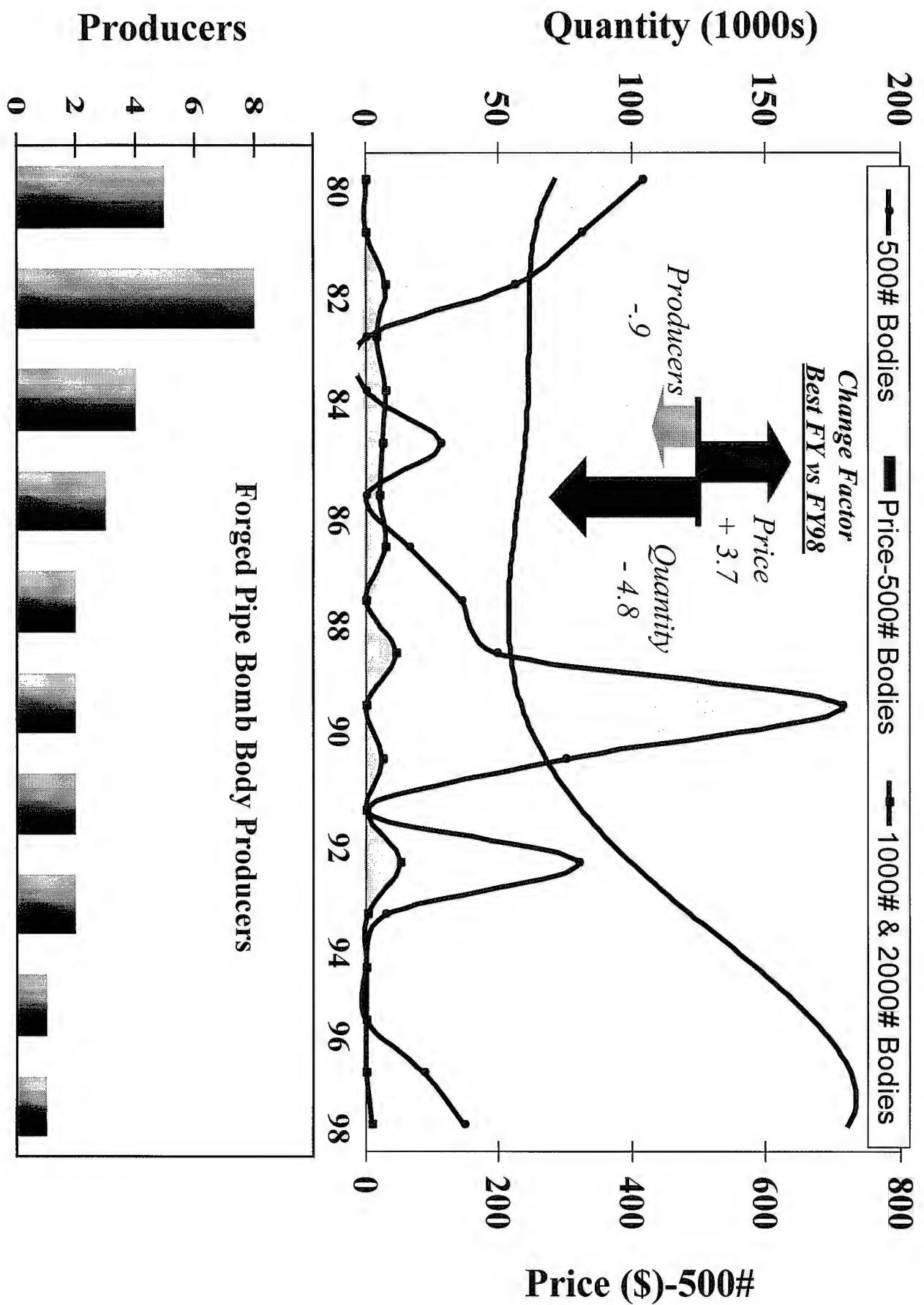
## Procurement, Price and Producer Trends







# SMCA Bomb Procurement, Price and Producer Trends



AMERICAN  
SUMMIT

98

INDUSTRIAL

DESIGN

DE

DE

DE

DE

DE

DE

DE

DE

DE

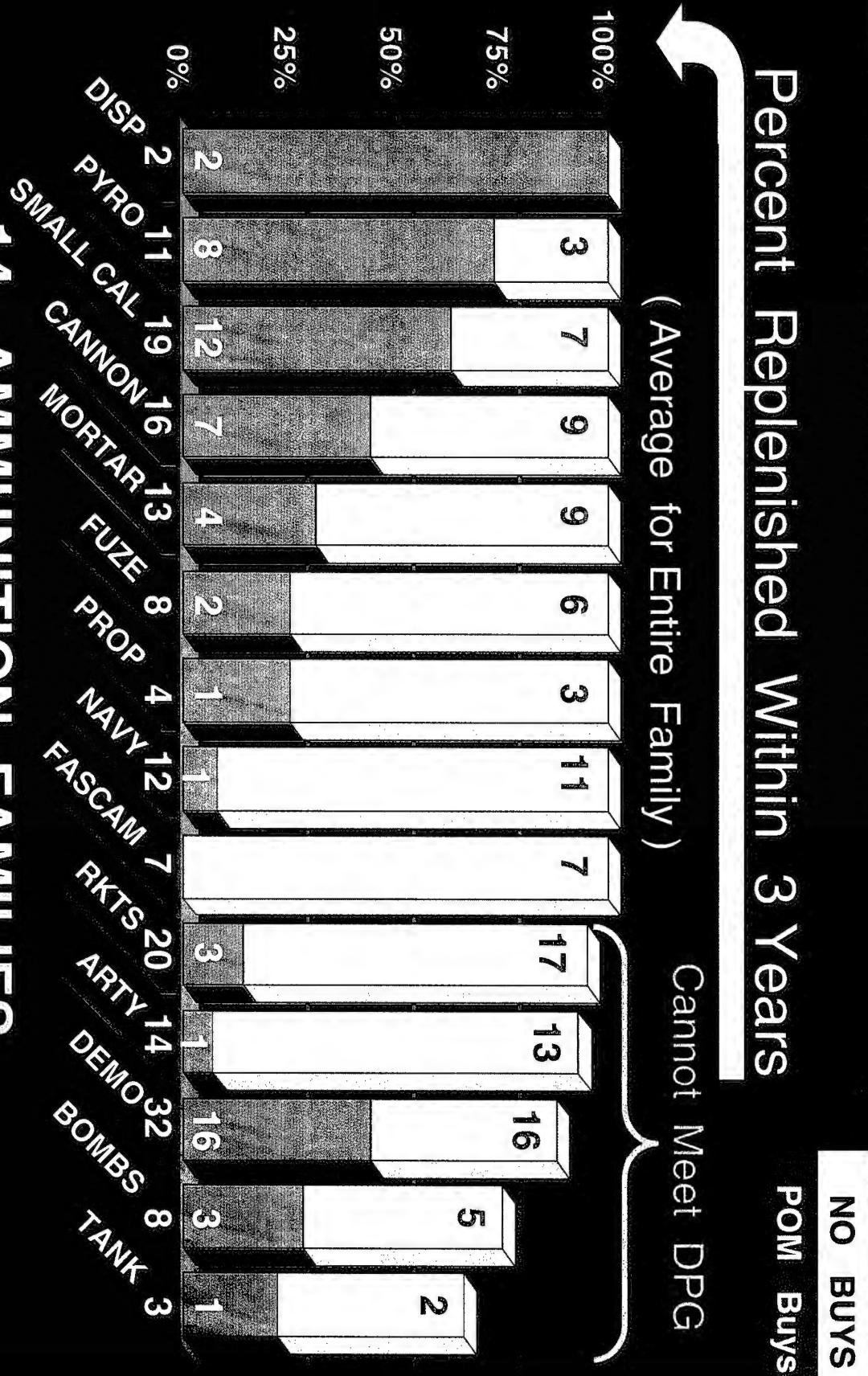
DESIGN  
EXPO  
1998

AMMO  
SUMMIT  
98

# MUNITIONS REQUIRED Over 3-Year Period Following Conflict

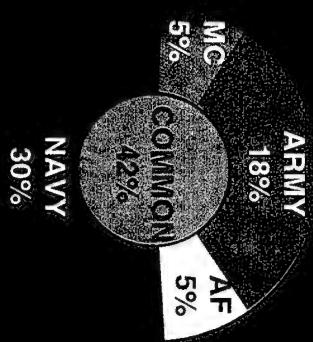
	<u>NO. ITEMS PER FAMILY</u>	<u>QTY REQD IN 3 YRS</u>	<u>CANNOT SATISFY</u>	<u>POM BUYS</u>
ARTY	14	2,400,000	1	1
BOMBS	8	300,000	2	3
CANNON CAL	16	31,800,000	7	7
DEMO/MIINES/GREN	32	5,100,000	16	16
DISP MUNITIONS	2	5,500,000	2	2
FASCAM	7	600,000		
FUZE	8	3,200,000		
MORTAR	13	1,700,000	4	2
NAVY GUN	12	2,000,000	1	1
PROP CHG	4	2,200,000	1	1
PYRO	11	10,700,000	8	8
RKTS / WHD	20	1,200,000	3	3
SMALL CAL	19	1,400,000,000	12	12
TANK	3	130,000	1	1

# CURRENT BASE POSITION ON REPLENISHMENT



# AMMUNITION ITEMS

## SMCA Replenishment



169 ITEMS → 9 with a  
{ SHORTFALL  
ALL SMCA REPLENISHMENT PLANNED ITEMS }

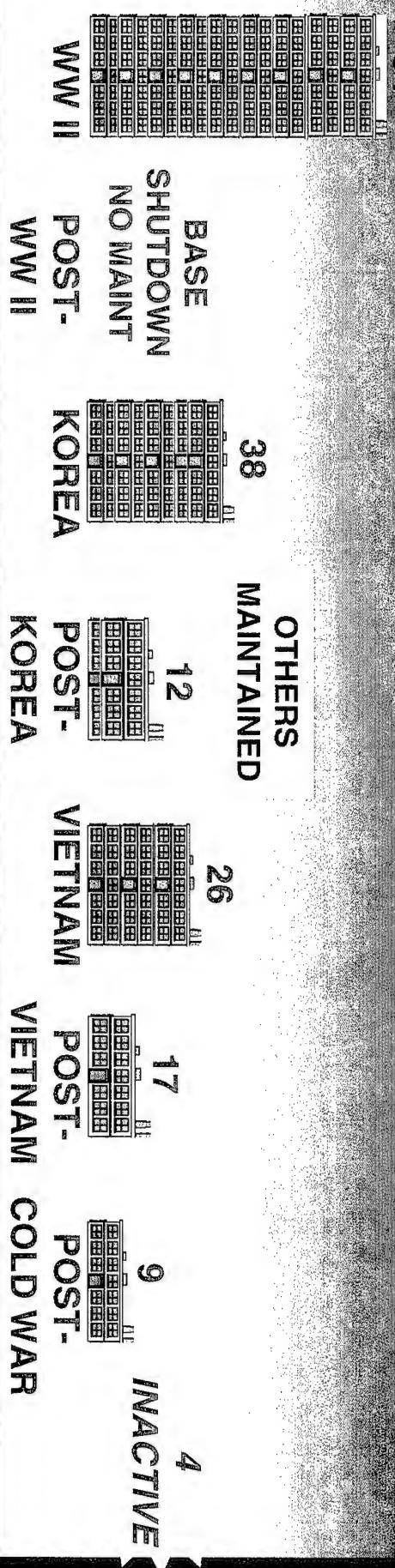
ARMY ITEMS 94 ITEMS → 6 with a  
{ 30 Army Unique + 64 Common to other services }  
SHORTFALL

WAR RESERVE (POM) → 29 with a  
SHORTFALL

OPLAN (Go to war today) → 46 with a  
SHORTFALL

# MUNITIONS BASE SIZING

## BASE EVOLUTION

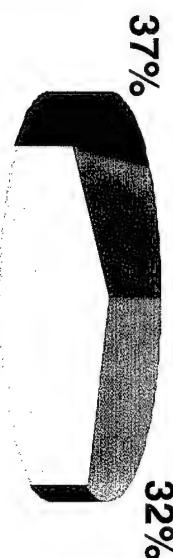


## APPROX 68% CAPACITY REDUCTION

FY 1990 → FY 1998

- 28 GOVERNMENT
- 13 GOVERNMENT
- 163 CONTRACTORS
- 72 CONTRACTORS
- 36 WITH GOVT INVESTMENT
- 16 WITH GOVT INVESTMENT

## CAPACITY



To Be Disposed

Disposed

Retained

BASELINE AUG 91

# FUTURE OF THE GOVERNMENT- OWNED AMMO BASE?

16 PEPs: Reduce thru Excess - to - Ownership

MSAAP: Explore Relocating Grenade Line

SCAAP: Pursue Excess - to - Ownership

RBAAP: Pursue Competitive Excess - to - Ownership

LAP: Pursue Reducing

One Facility

Continue Reducing Footprint

UNTIL TECHNOLOGY LEAPS AHEAD TO ...

## TRI-NITRO-CYAN

# NEUTRINO

## ENERGY BEAM

## BULLET

## TO SOLVE

# AMMUNITION ORGANIC PRODUCTION BASE

## ACTIVE

LAP > IOWA, MILAN  
& LONE STAR

ARTILLERY > LOUISIANA  
SHELL

PROPELLANT > RADFORD

EXPLOSIVE > HOLSTON

SMOKE > PINE BLUFF

SMALL ARMS > LAKE CITY

ARMY

BOMB > McALESTER

RESERVE PLANT

ARTILLERY > SCRANTON  
SHELL

NAVY GUN & PYRO  
& PYRO

## INACTIVE

GRENADES > MISSISSIPPI

CTG CASES  
GRENADES > RIVERBANK

# ACTIONS

XMAT approach for Holston AAP

Disposal contract for Longhorn AAP

Test with COE:

Cornhusker AAP

Teaming with GSA, COE, AMC, DA: Indiana AAP

Linking replenishment and peacetime in acquisition

Combining / grouping items

Multiple-year contracts

Facility contracting

Delta contracting

Excess to ownership

# POTENTIAL PITFALLS

Sub Optimization of Existing Base

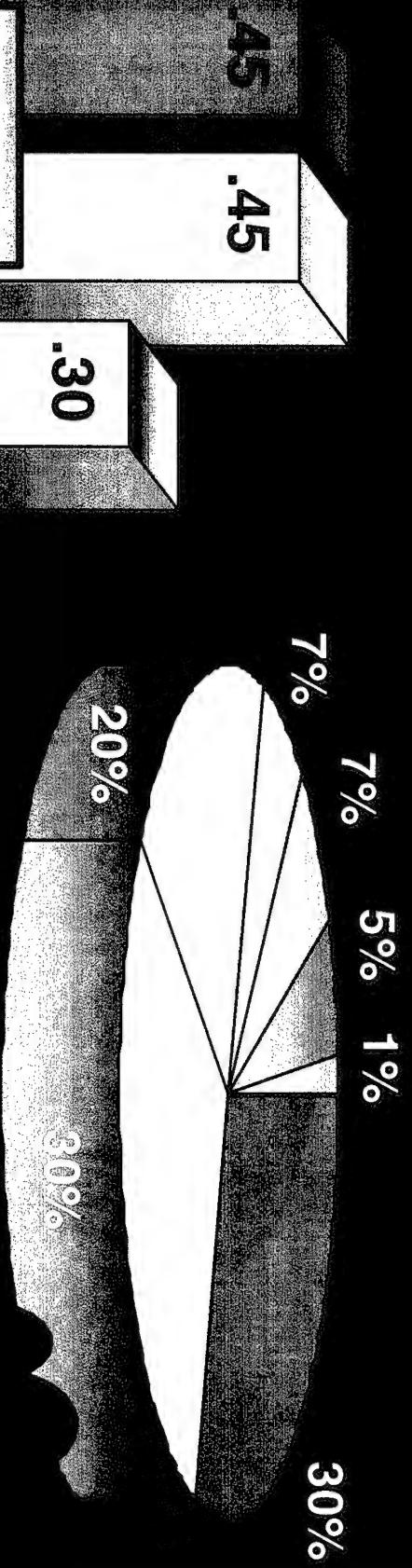
Base Sized for Only Peacetime

Site Manager - No Production Skills

Repetitive Investment Costs & Learning Curve

# HOW WE SHOULD OPERATE

## AMMUNITION BUDGET



War Reserve  
Training  
\*SJS/RI  
R & D  
DEMIL  
PBS  
ARMS  
\* STOCK / STORE  
RECEIPT / ISSUE

## MOST LIKELY SCENARIO

"It's tough to make predictions, especially about the future."

**Less money for base with increasing F&O competition.**

**Questioned to death.**

**More studies.**

**Bill payer material.**

**Companies hanging on until all profit is gone.**

**Encourage private / contractor investment...**

**...saves 20% so we can compete.**

**More mergers.**

**International buys.**

**"It's déjà vu all over again!"**



# Acquisition Strategies



Milton I. McKinney  
HQ, IOC  
15 September 1998

# LOC

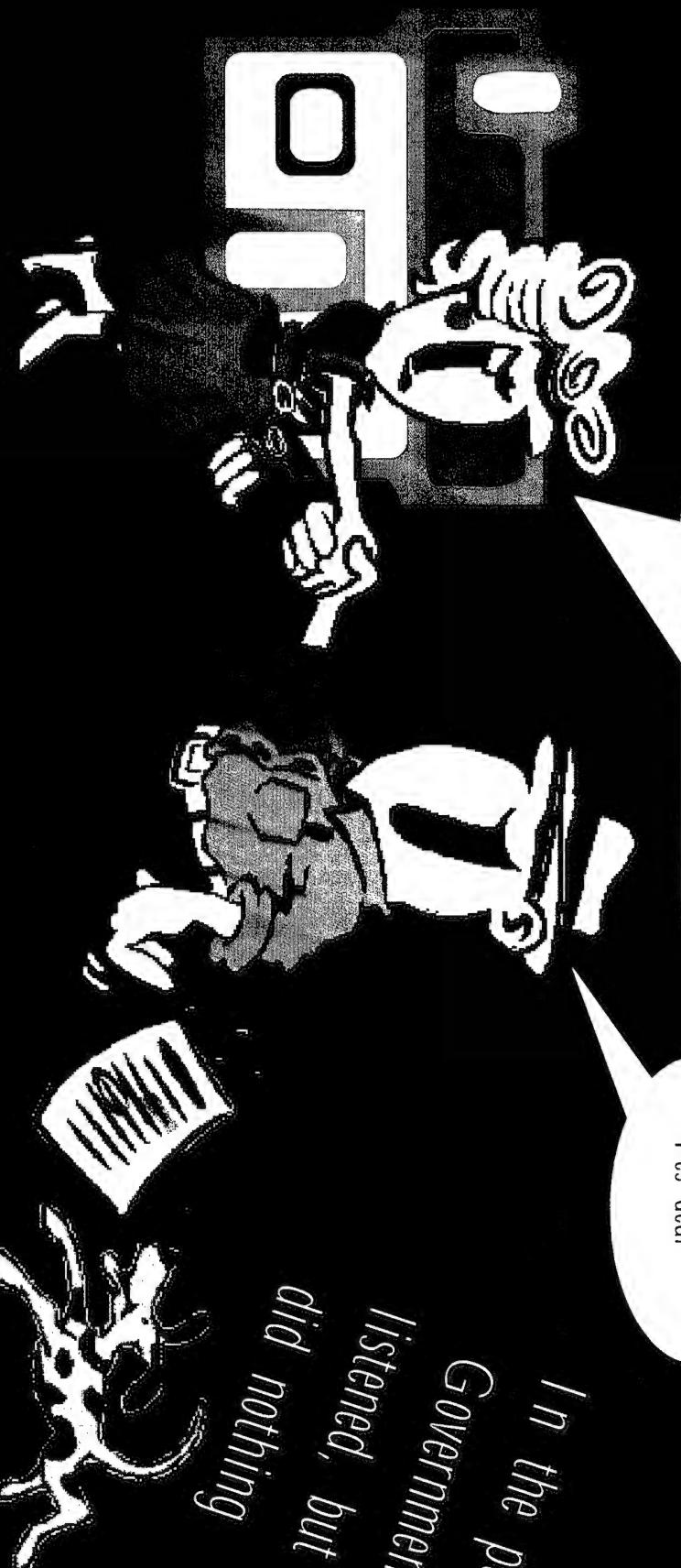
## Acquisition Household

Industry  
asked for

- Long term commitments
- Input to solving problem
- Combined products
- Flexible requirements
- Sharing the good & bad
- Partnership
- Fair play

Yes dear

*In the past  
Government  
listened, but  
did nothing*



YEAR 2000

PRESENT

Managing

Acquisition

During

Period of

Great Change

FUTURE

Managing

Ammunition

into Next

Decade

# Acquisition Strategies

- Tank Ammunition
- Explosives
- Small Caliber Ammunition
- Load, Assembly, Pack
- Medium Caliber
- 20mm
- 40mm
- Demil
- GOCO

# 120mm Tank Ammunition Multi-year Program Structure

- Program management (Training Rounds)
  - IOC cross functional co-located team
- Contract structures
  - 4 year multi-year with restricted sources
- System Contractors: PRiMEX Technologies and Alliant Techsystems
- Sub-tier Production Base: IAAAP (Mason & Hanger), RAAAP (Alliant Techsystems), Armtec Defense Products
- Results
  - 21% savings (\$136 million)

# 120mm Tank Ammunition MYU Acquisition Strategy

- Best value source selection criteria
- Key factor  $\rightarrow$  risk mitigation
- Source selection objectives
  - Timely delivery
  - Quality product
  - Affordable price
  - Partnering mindset

## 120mm Tank Ammunition MyU Acquisition Strategy (Cont'd)

- 5 year multi-year restricted competition
  - Incumbent system contractors
  - No sub-tier restrictions
- J&A approved under "Exception 1" on 19 Feb 98

# Explosives Compete the Problem

- HMX/RDX at the best cost and quality and on time
- Provide R&D for products of the 20th and 21st century
- Have replenishment capacity
- Develop/execute a future strategy for the Holston facility

Involve industry in developing the solution

# Explosives The Solution

- Manufacture of RDX/HMX at Bridgewater, UK until Holston is reconfigured
- R&D = pilot through production (ARDEC, Indianhead, DERA, and Thiokol)
- Use Holston with efficiencies for replenishment
- Facility use, to be marketed
- Savings - \$184 million

Royal Ordnance of North America is the successful offeror

# Small Caliber Ammunition Acquisition Strategy

- Presolicitation Conference 9 Jul 98
- Industry to provide solutions
  - Manufacturer small caliber ammunition at the best cost and quality, on time including NATO approved U.S. design
  - Provide for R&D
  - Capacity for replenishment
  - Facility use at Lake City AAP and NATO Test Facility that makes sense

# Small Caliber Ammunition

## Acquisition Strategy

- Full and Open competition
- Best value (price, past performance, and technical)
- Long term
- Firm fixed price
- Range prices
- Two separate contracts: Ammunition items and facility use

# Load, Assemble, & Pack Ammunition “Best Value”,

## *Army Commits*

- Indemnification
- 5 yr facilities-use contract (same as Iowa AAP)
- Maintain or compete workloaded items. Intend to workload for at least 2 years
- Follow through on planned investments
- Total customer partnering improvement
- Facilities use management
- Total customer partnering

## *American Ordnance Commits*

- Guaranteed 20% LAP price reduction on IOC projected workloaded items; reduction % ramps up from 1999, 2000, & 2001 to 20% by 2002 & in 2003
- Fixed viability
- Sensible investment (up to \$10M)
- Radical & continuous

# 25mm-30mm Ammo Acquisition Strategy

## FY 99-03

- Restrict to the United States and Canada
- Retain two sources via split awards
- Consolidate 25mm/30mm Cartridges when prudent
- Award multi or multiple year contract(s) in FY 99 for FY 99 - FY 03
- Exclude M919 25mm APFSDS-T Cartridge due to non-transition

# 20mm Ammo Acquisition Strategy

## FY 99-03

- Restrict to the United States and Canada
- Compete annually
- Award single "winner take all" contract annually
- Reexamine strategy if 20mm ammo requirements increase in later years

# 40mm Acquisition Strategy M918 Projectile Assembly

- Competitive 8(a) procurement
- Largest 8(a) concern set-aside in LOC
- Firm fixed price contract
- 100% unevaluated option
- Potential future multi-year systems buy
- LAP at American Ordnance

# Ammo Demil Acquisition

- Enhanced small business participation
- 5 year ID/IQ long term contract
- Munitions - greater diversity
- Two awards to maintain out year competition
- Government/industry shared risk
- Less reliance on firm fixed price contracts
- Contractors will have on-line access to TDPs
- Teaming with organic operators

# Proposed Active GOCO Strategies

Holston

Awarded

Lake City

Award 2000 – 5 yr. award + 5  
priced 1 yr. options

Hawthorne

Award 2000 – 1 yr. award + 6  
priced 1 yr. options

Lone Star

Compete within 5 yrs.

Milan & Iowa

Non compete award thru 2003

Radford

Compete 2003

LOC

## Acquisition Household

Thank you

dear

Finished projects

- IPT
- Partnering
- Army Credit Card Program
- Restructuring Organizations & Processes
- Information Technology and Electronic Commerce
- Use Common Processes
- Performance Based Contracts
- Removing Barriers to Business Judgment
- Market Research
- Innovative Contracting
- System Contracting



# IOC APBI

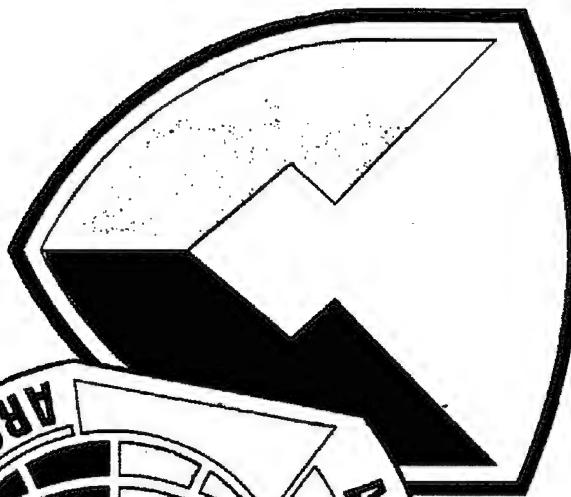
2 - 3 March 1999

Holiday Inn, Moline, IL

Presented by:

*Brigadier General John Deyermond*  
DCS Ammunition

# Air Force Materiel Command



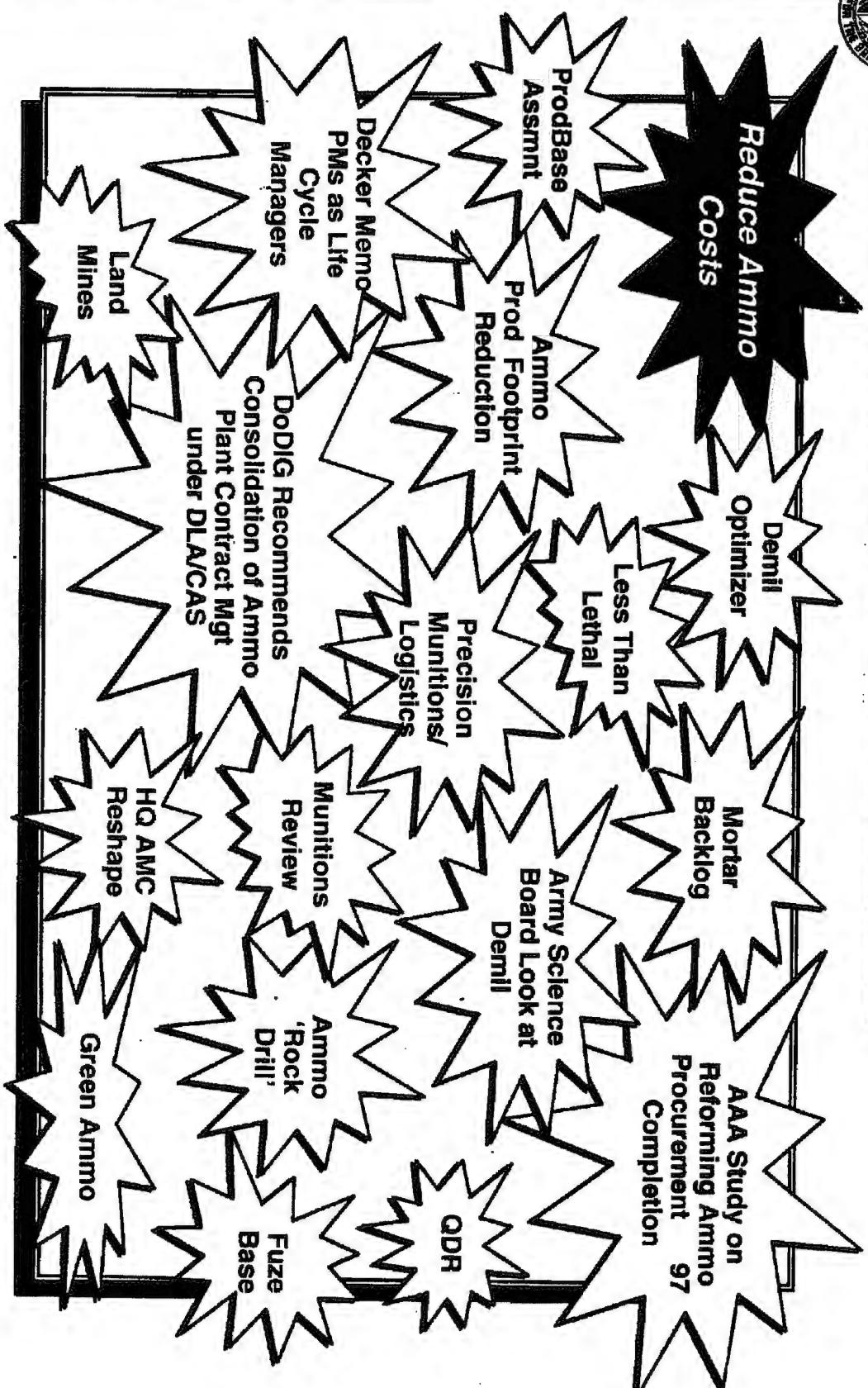
**Ammunition Update**  
to  
**MUNITIONS SUMMIT**  
**15 September 1998**

**A M C – Relevant, Responsive & Ready !**

# Current Ammo Issues



— Ammunition is a busy business !!! —

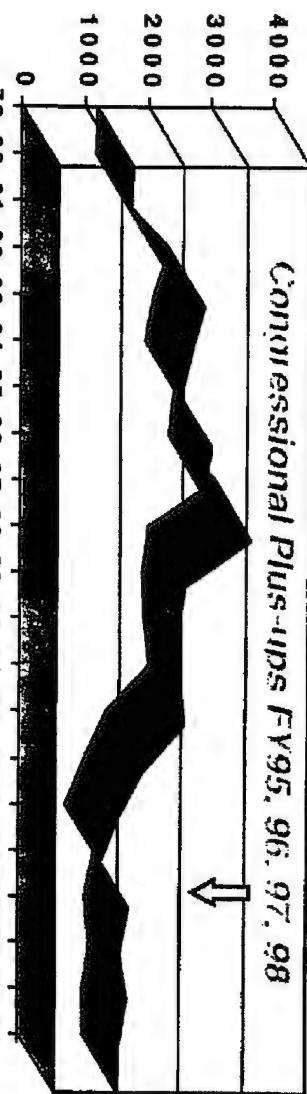




# PAA - Funding Profile

## PAA Historical Trend

(\$M)



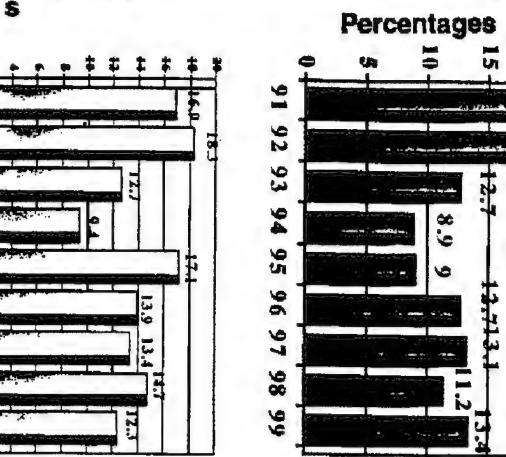
## Procurement as a Percentage of Army Budget - FY98/FY99

Army Budget  
(\$ in Millions)

APPROPRIATION  
FY98      FY99

	FY98	FY99
FAMILY HOUSING	1,292	1,256
MIL PERSONNEL	25,754	26,211
RDTE	4,511	4,487
MCA	597	707
OMA	20,656	20,468
<b>PROCUREMENT</b>	<b>6,752</b>	<b>8,373</b>
ERA	377	386
BHAC	400	524
<b>TOTAL *</b>	<b>60,442</b>	<b>62,512</b>

Percentages



Today's Production  
Reflects Yesterday's  
Funding -

## Ammunition as a Percentage of The Procurement Budget - FY98 & FY99

Procurement Appropriation  
(\$ in Millions)

APPROPRIATION  
FY98      FY99

	FY98	FY99
AIRCRAFT	1323	1326
MISSILES	744	1206
WICV	1291	1434
AMMUNITION	1020	1069
OTHER PROCUREMENT	2563	3111
<b>TOTAL</b>	<b>6240</b>	<b>8111</b>

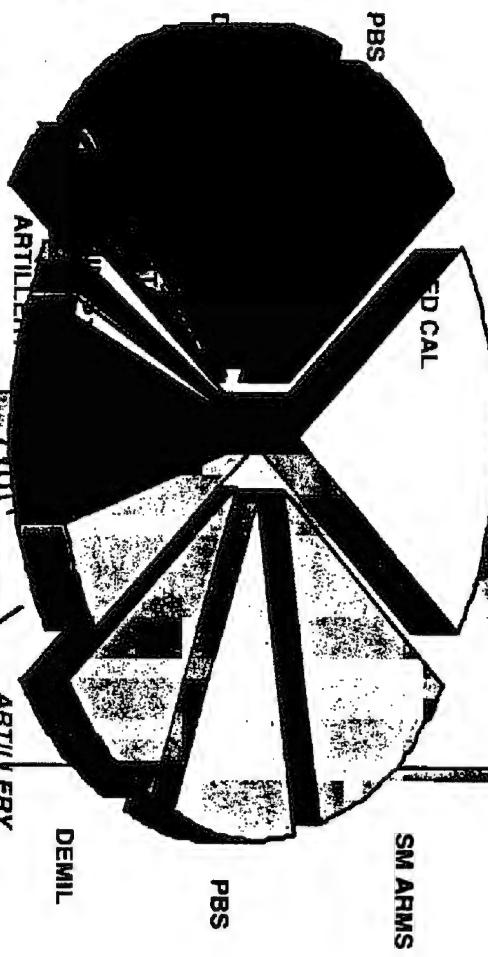
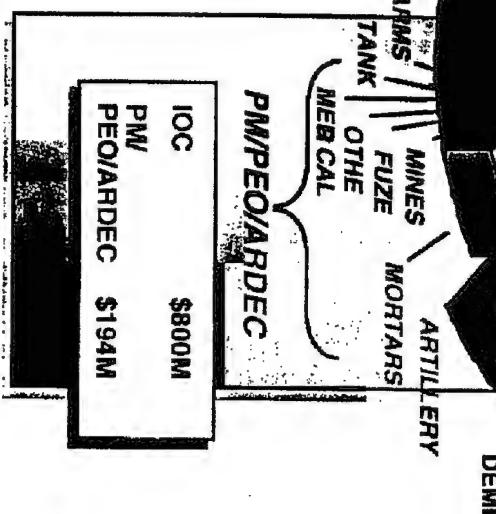
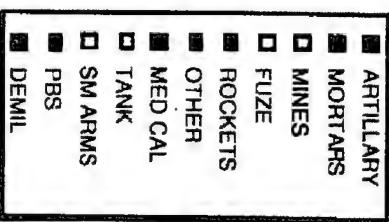
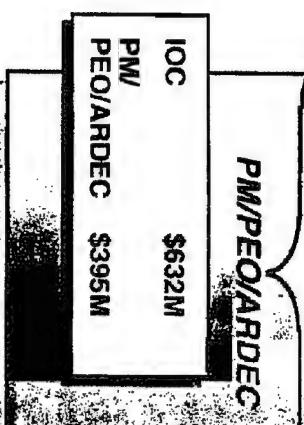
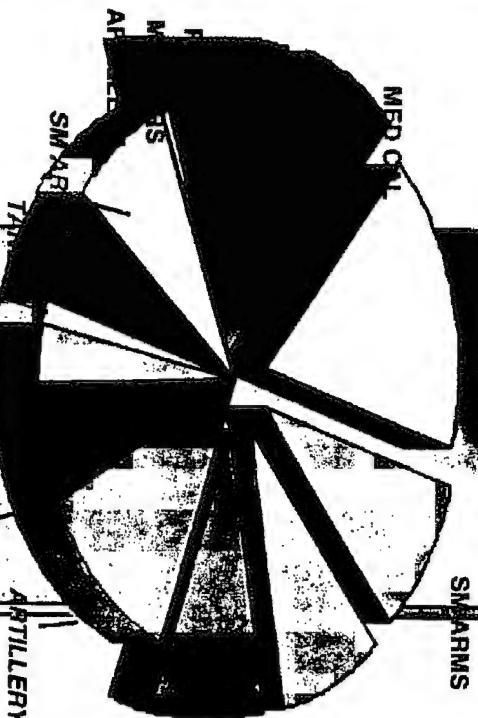
←

# Army Ammo Funded Requirements



PAA

FY98



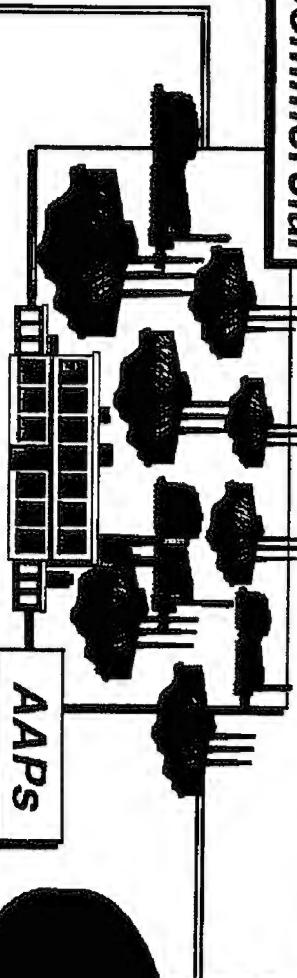
FY99



# Ammunition Production Base

## FY98-99 Budget

### Commercial



### Activity 2 PAA Funding

\$ Million  
FY98

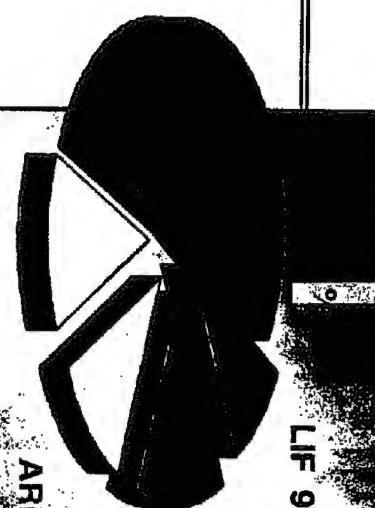
	24.3	47.7
Industrial Facilities (IF)		
Layaway of Industrial Facilities (LIF)	16.4	15.3
Maintenance of Inactive Facilities (MIF)	22.5	15.8
Conventional Ammo Demil	91.0	98.0
Arms Initiative	24.4	4.9
<b>Totals (\$ in Mill.)</b>	<b>131.7</b>	

MIF 13%

ARMS 3%

LIF 9%

PIF 14%



### Challenge

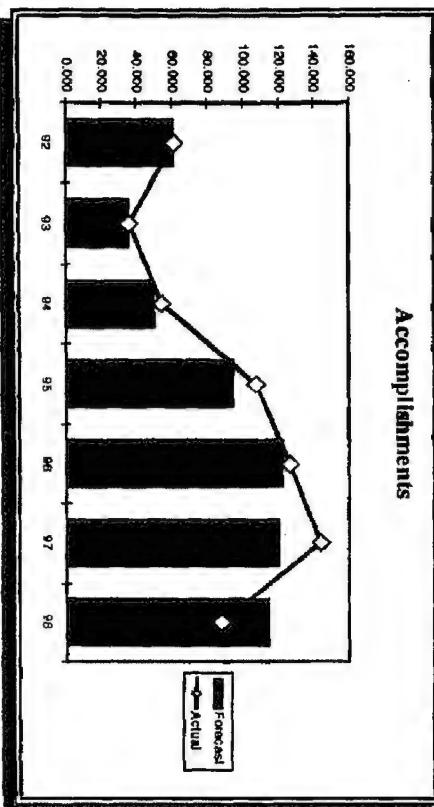
Production Base  
vs.  
Hardware



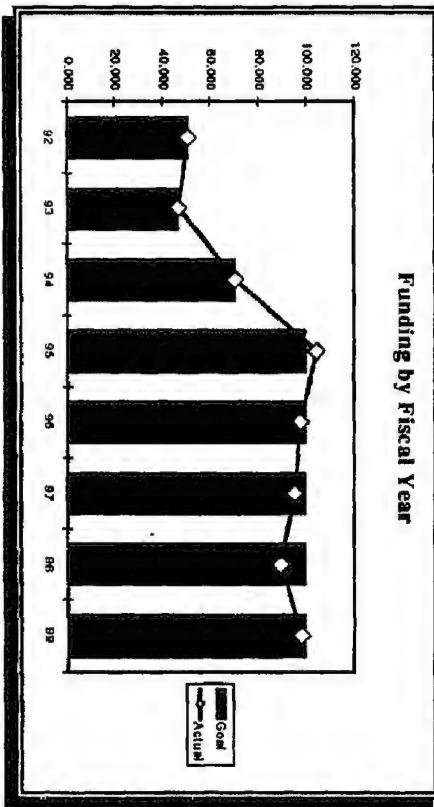
# Ammunition Demilitarization

## Accomplished/Forecast

Accomplishments



Funding by Fiscal Year



### Goals-

- Continue to avoid demilitarization through direct sales, FMS, cross-leveraging between services and use in training whenever possible
- Execute a balanced program between destructive and non-destructive technologies
- Maintain a balance between government installations and the growing private industry capability
- Continue with our successes

Note 1: Cost spike during FY97 was due to greater than normal use of incineration @ approximately \$2,000 per ton.

Note 2: Includes reimbursable projects.

(data as of 8/17/98)



# CAWCF Closure

## Direction/Plan

### \* DOD Comptroller Directs CAWCF Close-out Beginning FY 99 [PBD 432, Nov 1996]

- Separate Financial System for Ammunition Considered an Unnecessary Expense
- Directed APIT Be Formed by OSD(A&T) To Determine Follow-on Procedures and Oversee CAWCF Closure

### \* Army Develops Closure Plan

- All Orders Delivered and Fund Closed by FY05
- Army Audit Agency to Validate Closure Cost
- Plan Approved by All Services & OSD in May 97

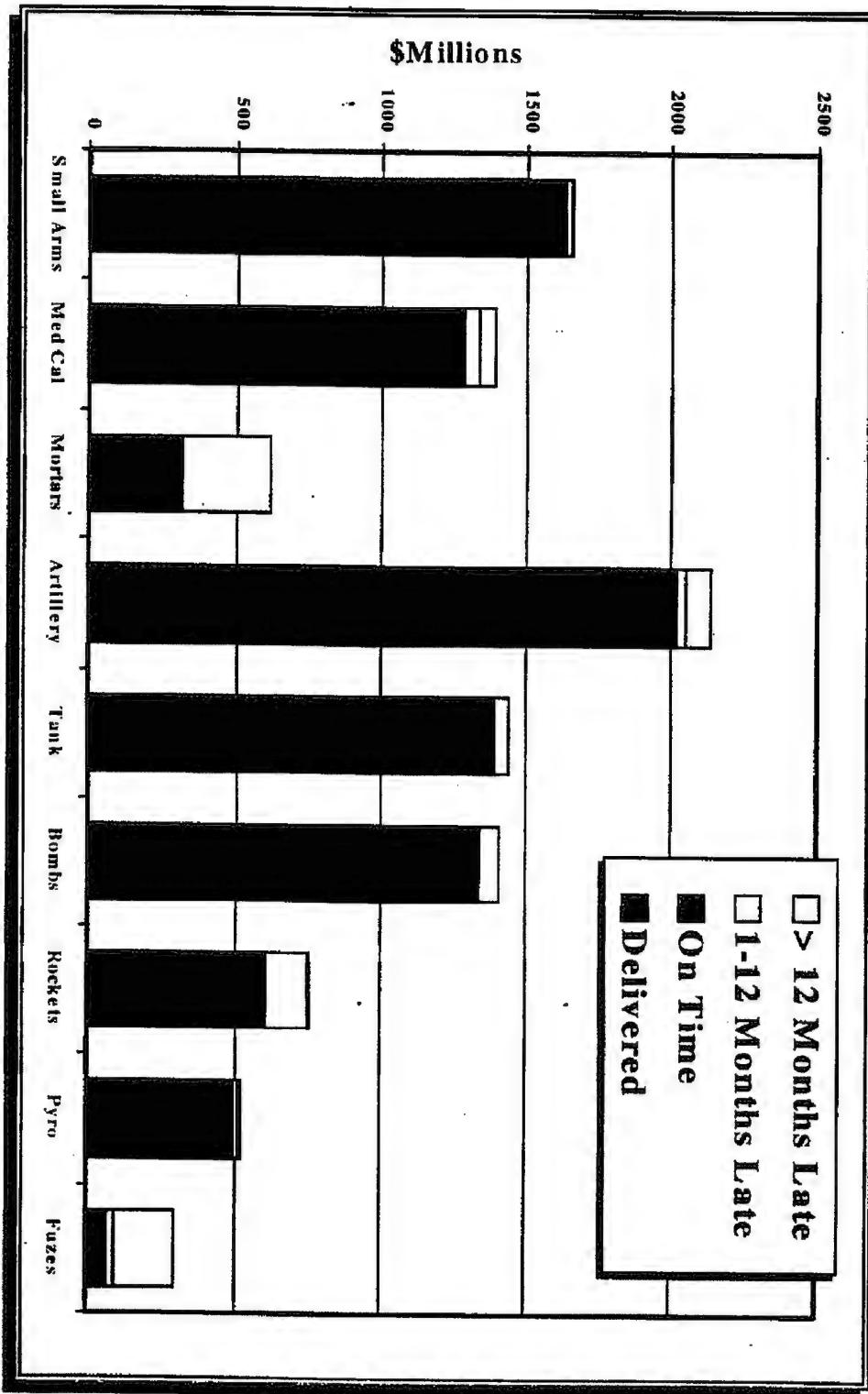
### ✓ Fund Obligation Closely Scrutinized

- ✓ Accurate Pricing
- ✓ Reduce Lead Times
- ✓ Fixed Price Contracts with Options
- ✓ Increased Systems/Bundle Buys



# *Work in Progress FY90-97* *CAWCF Orders*

*as of 30 SEP 97*





# *Ammunition Procurement Projection by Categories*

**FY98-03**

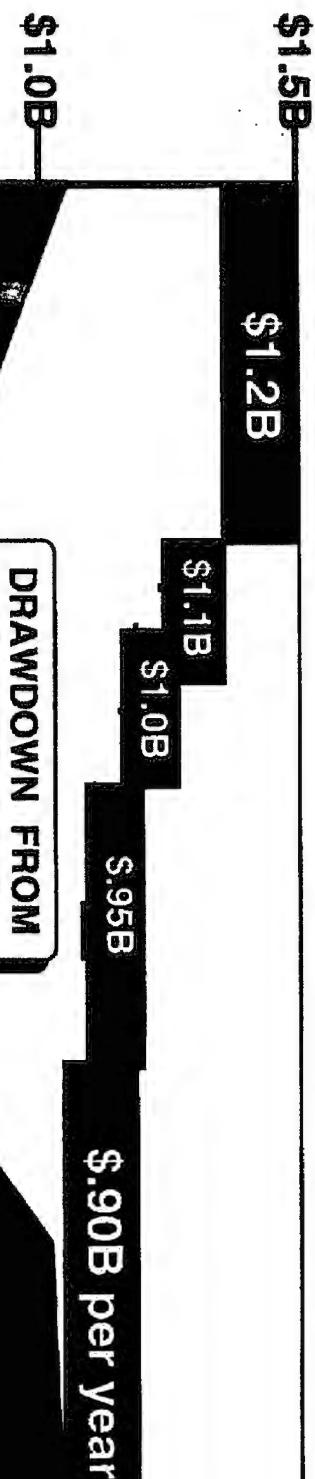


**FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03**



## Training Ammunition

### Resource Trend



DRAWDOWN FROM  
WAR RESERVE

- WR Drawdown Ending
- Modernization
- Increased costs

Training Ammunition Procurement + WR Drawdown = Training Resourcing

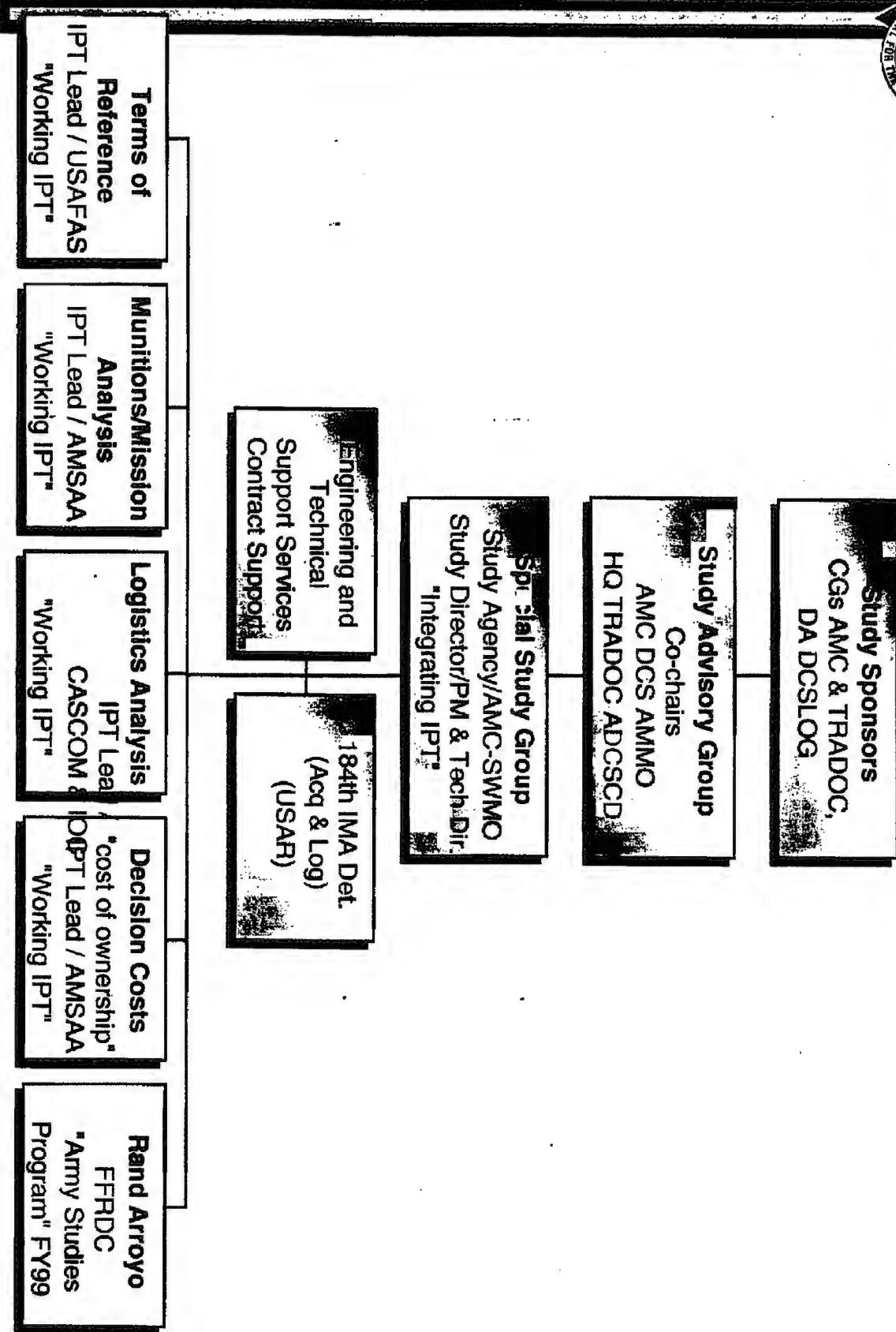


## *Precision Munitions/Logistics Study Broad Study Questions*

- \* Given the warfighting strategies of Force XXI and Army After Next, what are all logistics impacts that result in the use of precision munitions [heavy mix] versus the use of non-precision munitions [only]?
- \* Given these logistics impacts, what are the resulting possible implications on Army force modernization strategy and Army force composition? What are those costs?
- \* What are the true burdens (deltas in logistics) of precision munitions versus non-precision munitions across all combat, combat support, CSS force structure, and O&S? What are those costs?
- \* For the decided upon scenario, time frame, and weapon mixes, determine the level of investment and cost comparisons to acquire and sustain a realistic a mix of precision munitions and non-precision munitions?



# PMILS Organization





# PMLS Conventional and Precision Munition Candidates (12)

Target Description	Current / Conventional Munition	Next Generation Precision Munition	PMLS Comments/Benefits
Bunkers, soft targets	Bunker Defeat Munition	PGMM 120mmwides urban combat capability, extends range and precision	
Anti-armor	Family of 120mm tank main gun ammo	Tank extended range and survivability by engaging targets in defilade	
All targets	155mm, DPICM base bleed, M864	ER XM982 DPICM extends range and range for counter battery	
Bunkers	155mm, HE w/ delayed fuse	ER XM983 HE delayed fuzing for bunker engagement	
Counter Battery	155mm, DPICM	XMM898 P/ SABRE efficient counter battery killer	
All targets	155mm, DPICM	155mm, Low Cost CBRN munition for accurate registration Munition (LCCM) Fuzing & less target engagement on M864 / M88 reduces munition requirements	
All targets but heavy armor	MLRS DPICM, XM85	MLRS DPICM Extends range and significantly with GPS guidance. Improves accuracy	
Anti-armor	No current in-direct rocket launched capability	MLRS MSTAR kills ACV targets deeper Diminishes intensity of close fight Improves force survivability	
All targets but heavy armor	ATACMS APAM	ATACMS IA Accuracy independent of range	
Anti-armor and High Value targets	No current in-direct missile launched deep capability	ATACMS I / BAKM&H Value targets deep, improves force survivability	
Soft point targets and bunkers	Hydra 70, and sometimes Hellfire II (LSA)	Advanced Precision Kill Weapon System (APKWS) (Reduces collateral damage)	
Heavy armor targets and	Hellfire II (LSA)	Apache Longbow Estimated platform survivability Provides all weather capability	



## *Most Likely Area of Impact*



*CSS Top*

All munitions  
(Class V)  
comprise 70%  
of CSS tonnage

Artillery  
ammunition is  
80% of that.

The opportunity exists for Artillery Precision

Munitions  
to impact 56% of CSS tonnage.



## *Precision Munitions and Logistics Study (PMLS) Synopsis*

- \* Quantify deltas in cost of ownership/burden to the Army between current conventional non-precision munitions and future precision munitions, across the total logistics footprint and in battlefield performance
- \* Draw from previous and ongoing effectiveness, warfighting, and logistic analyses (WARREQ, IOC Rock Drills, Crusader Ammunition Supply Study, etc.)
- \* Identify and quantify value of Revolution in Military Logistics (RML) between conventional and precision munitions
- \* Develop data, findings, conclusions, and recommendations for decision makers for the POM 02-07 process in FY 99



## Summary

### ***Imperatives:***

- \* Reduce Cost of Ammunition
- ✓ Production
- ✓ Storage / Maintenance
- ✓ Demilitarization
- \* Maintain Readiness
- ✓ Replenishment Capacity
- ✓ Ability to Produce Future Requirements

PMLS  
Study!

# Privatization and the Munitions Base



**Ken Morgan**  
**President**  
**General Dynamics Ordnance Systems**

## Overview

- Definitions
- Differing Views of Privatization
- Comments on Study Recommendations
- An Alternate Approach
- Depot Privatization



## Definitions

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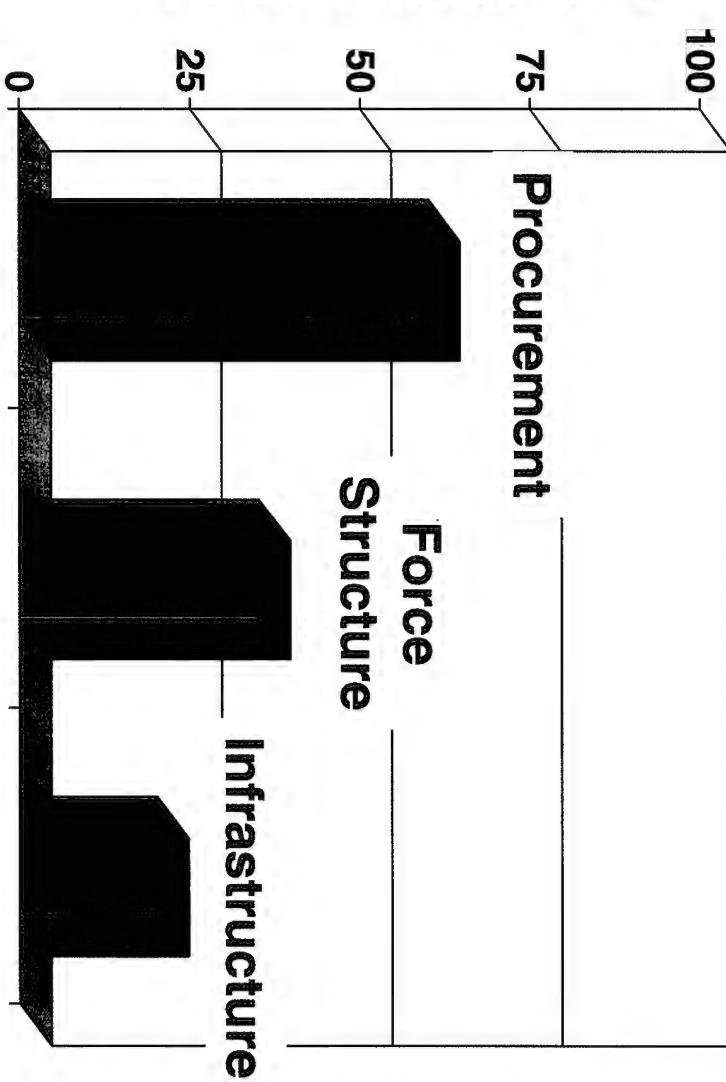
- **PRIVATIZATION**
  - The transfer of assets from government ownership to private ownership
- **OUTSOURCING**
  - Contracting out for services and support formerly accomplished with internal government resources

Terms Often Used Interchangeably

## Why all the Interest?

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- FY97 - 01 DoD Infrastructure Costs: \$740 Billion
- Budget Reductions since 1989:



Infrastructure Not in Sync with Today's Realities

## Privatization Theories

---

- “Field Of Dreams” Theory:
  - If you build it, they will come
- Government Privatization Corollaries:
  - If we own it, it must have commercial value
  - If we offer it, they will come
- Industry Executive Reverse Corollary:
  - If you don’t want it, neither should we

Much talk about business-case analysis, but little real appreciation of market forces

## Study Recommendations re Privatization

---

- Government owns selected real estate as ammo industrial parks -- "magnets" for ammo producers
  - Operated by private site manager
    - » Invests to attract tenants
    - » Uses site assets to generate revenue
- Industry finances, owns, & operates production assets; invests to modernize



## Industry Perspective

---

- Must provide increasing shareholder value
- Driven by Return on Investment (NPV/IRR)
- Key factors:
  - Stability/predictability
  - Ability to control variables
  - Ability to leverage assets for maximum return
  - Ability to be lean and agile
  - Ability to create and sustain a competitive advantage
- Think: strategic, integrated, expandable
  - Not: limited-use, single program, disassociated

## American Ordnance Model

---

- Full-service Commercialization at Iowa & Milan AAPs
- Government retains ownership
- American Ordnance:
  - Operates both plants under FUC
  - Has flexibility to consolidate/transfer operations and integrate systems
  - Maximizes use of Best Commercial Practices
  - Commits to 5-year fixed catalog pricing
  - Commits to invest
  - Enhances competitiveness for international/ third-party sales
  - Preserves key production base resources



## Depot Privatization

---

- Complicated by numerous laws & regulations
- Typical scenario: BRAC, Outsourcing, Real Estate Transfer
- Examples of Privatization In Place -- NOSL & NAWC
  - Pass-through leases + work contracts
  - “Hot Turnovers”
  - NAWC seen as most successful
    - » Viewed differently by contractor
- Alternative: Public/Private Partnering

## Summary

---

- High infrastructure costs mandate spin-off of more government functions and assets
- Privatization comes in many forms
  - Market factors not often understood
  - Not a panacea
- Commercialization and Partnering offer alternatives
  - Achieve most objectives of privatization
  - Faster, Cheaper, Better
    - a win-win framework



1990

1998

## Millions Eventing

Summer

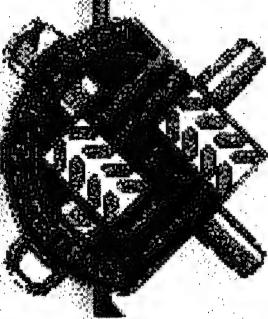
ISAY THE BANK AUTOMOTIVE GENIUS COMMAND

Presented by

MG Hoy E. Beauchamp  
CG, US Army Tank-automotive and Ammunition Command



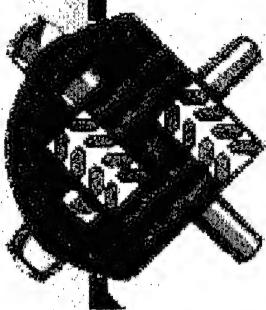
## ★ ★ Corporate Vision



- To make the technology and sustainment systems work for soldiers through the seamless integration of S&T, R&D, Acquisition, Log Sustainment and Soldier Readiness.
- To create a business environment at TACOM where every associate understands the requirement to control costs and manage from the customer perspective and understands their inherent responsibility to do so.



## BUSINESS VISION



- A fully integrated business environment connected by a fully integrated data environment using commercial business processes to integrate business operations within each organization, across major Commands, across Services, across DoD and across Industry.
- A corporate management structure for which the organizing principle is multi-functional work teams to institutionalize the concept of integrated process teams; a highly decentralized structure which uses the integrated data environment to link desk top "servers" to facilitate the transformation of data into actionable information to enable more efficient, fully integrated business operations at reduced cost.



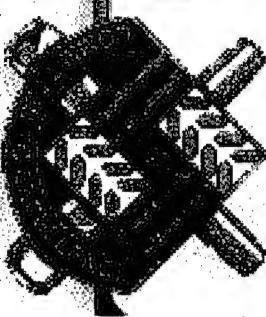


## Purpose of Presentation

- TACOM's Corporate Response to change

- TACOM's Core Competencies-Munitions Focus

Change





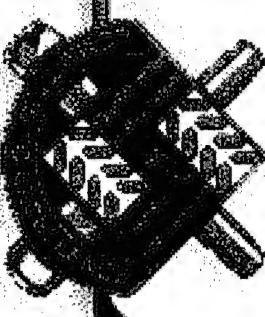
## Briefing Outline

- **Background**

- A Changing Military Perspective
- Impact on Ammunition Systems

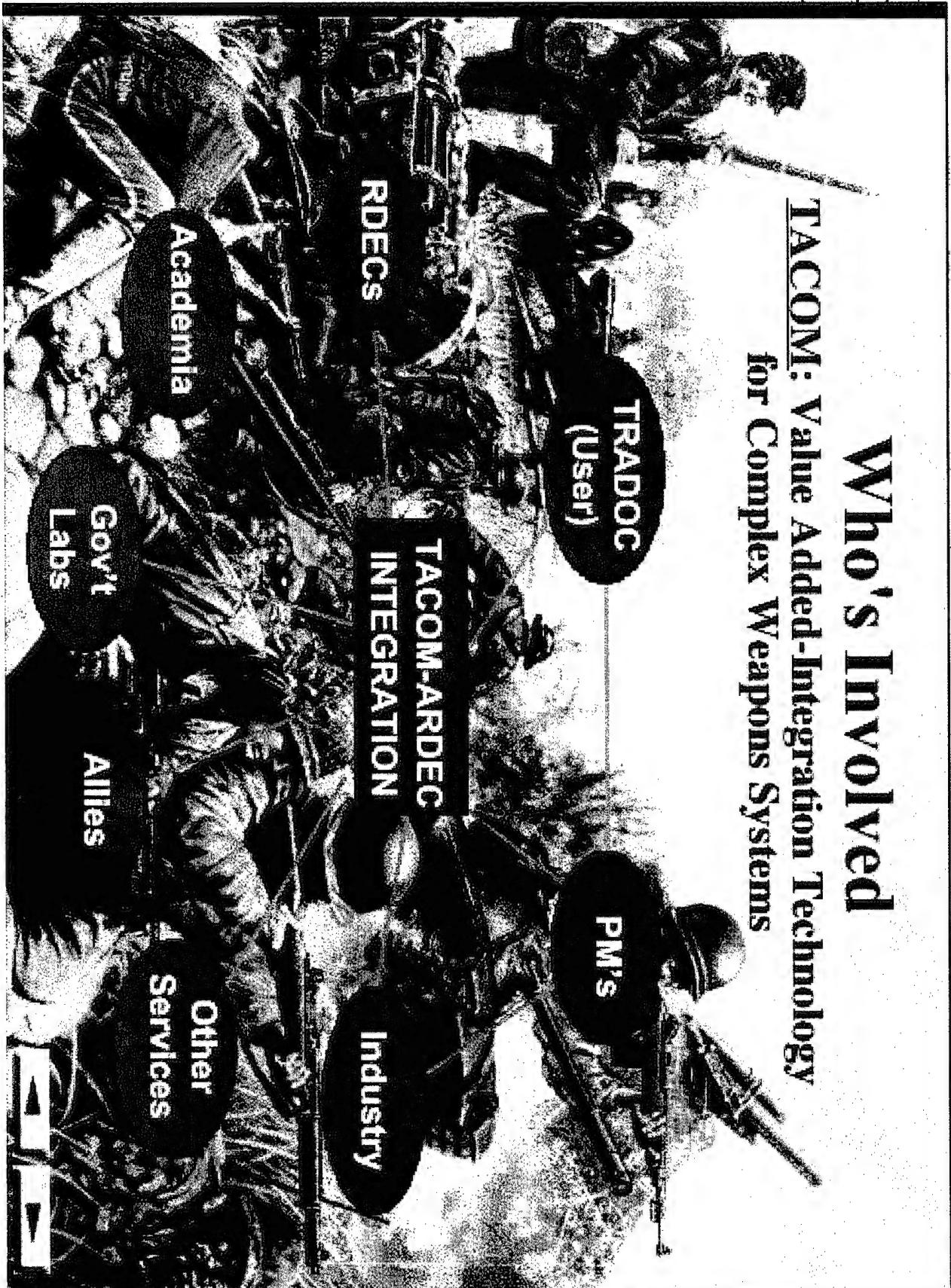
- **Integration is a TACOM Core Competence**

- TACOM Mission
- ARDEC/TARDEC focus
- Organization for the future
- **TACOM Meets the challenge of doing business in the Future**
  - TACOM of the Future
  - Integrated Ammunition Systems



# Who's Involved

**TACOM: Value Added-Integration Technology  
for Complex Weapons Systems**



# TACOM MISSION

FOR C E

-To Generate Warfighting Capability for the Army

-To Sustain the Warfighting Readiness of the Army

-To manage the Army's Investment in S&T, R&D and Sustainment for the Army

3,341 Weapon Systems

34, 138 NSNs

300 Systems in Aco Pipeline

Tank-automotive & Armaments COMmand

Research, Develop, Field and Support

Mobility and Armament Systems Total Life Cycle

To Support Army Readiness

Combat Vehicles	Fuel & Water Distribution Eqpt	Mortars	Rail
Tactical Vehicles	Sets, Kits & Outfits	Rifles	Watercraft
Trailers	Shop Equipment	Machine Guns	Retro & Lub Eqpt
Construction Equipment	Chemical Defense Equipment	Ammo	
Materiel Handling Equipment	Howitzers	Aircraft Armaments	
Tactical Bridges	Large Caliber Guns	Demolitions & Explosives	

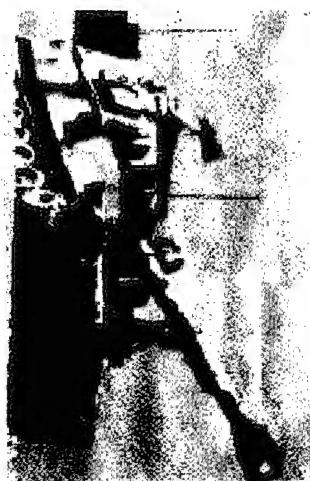


# Ammo Mission

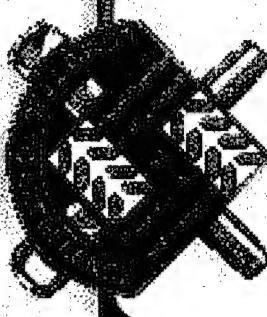
## Mounted Operations



## Fire Support



## Combat Service Support



## Special Operations



## Dismounted Operations



## Counter - Mobility



## Aviation Armament



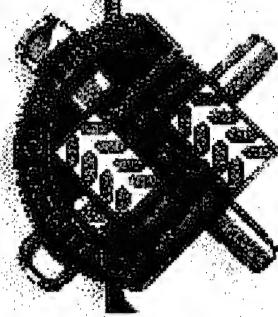
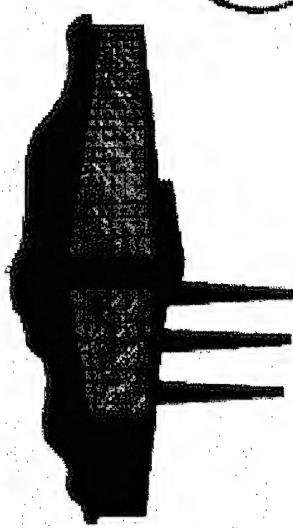


## **Business Factors**

Personnel  
Reductions

Acquisition Reform  
Life Cycle Mgt.

Ammunition  
Budgets



AAN Ammunition  
Requirements

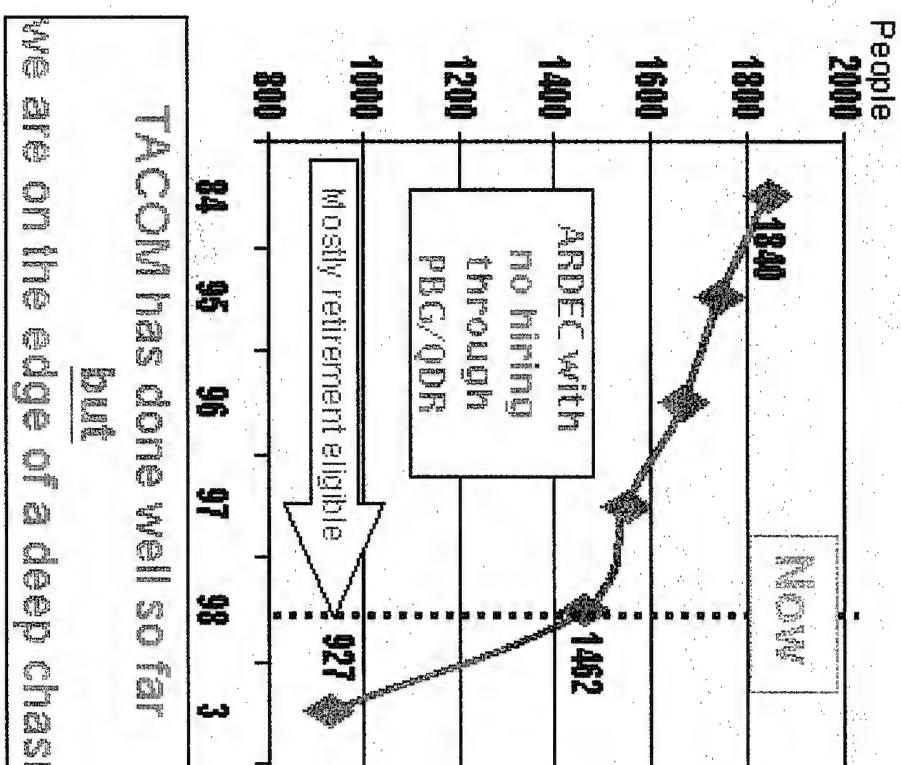
Ammo Base  
Reductions

Changing Military  
Perspective

Ammunition Business Base



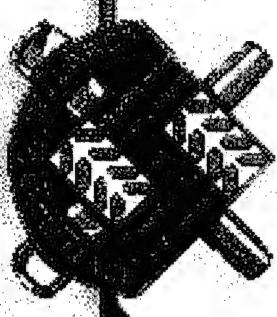
## *Armaments Skill Base* *History & Projected*



TACOM has done well so far  
but  
We are on the edge of a deep chasm



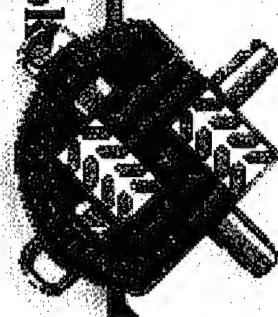
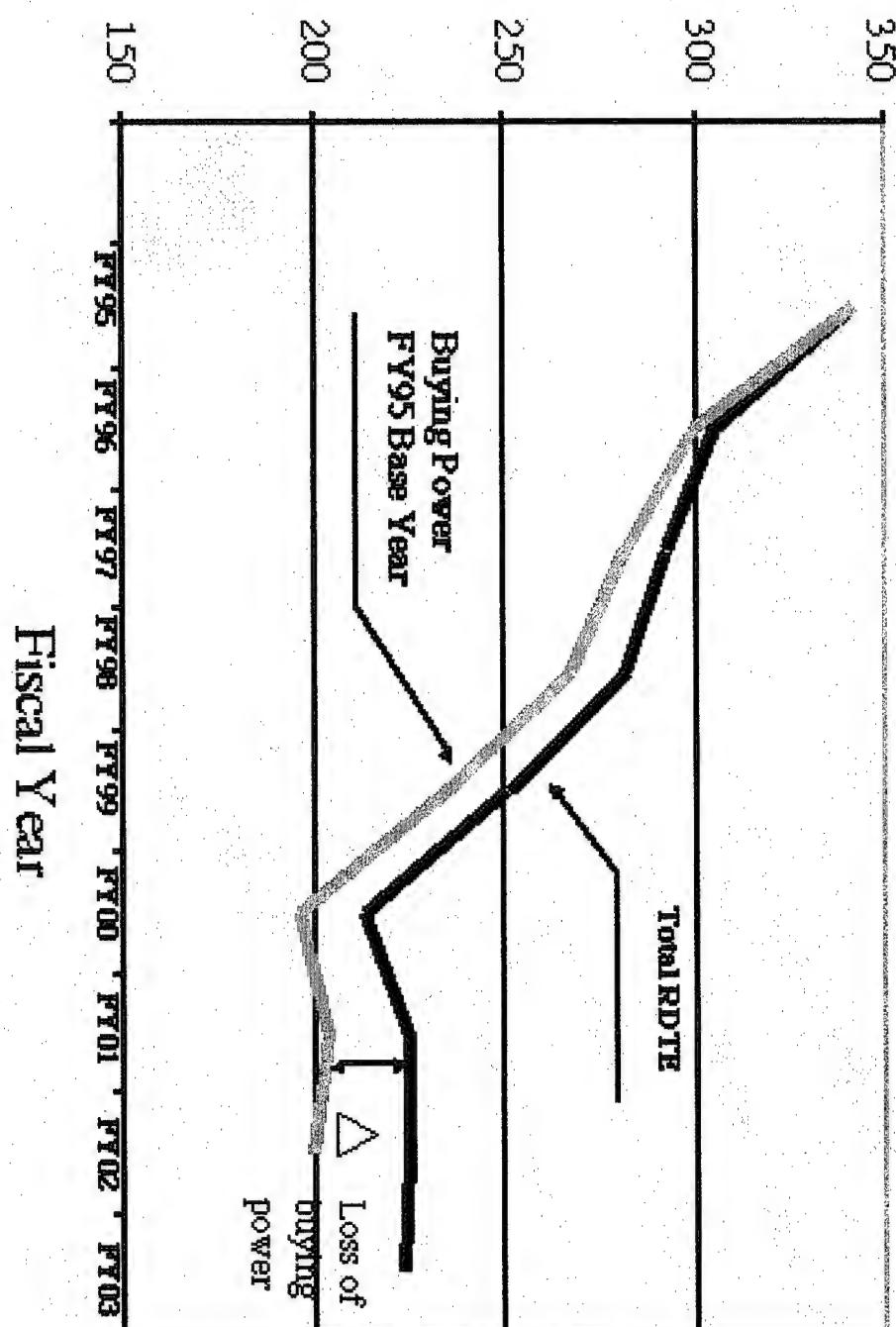
ENGINEERS & SCIENTISTS





## Decreasing Revenues

### TACOM-ARDEC RDTE Revenue Outlook





## Changing Perspective

- **Changed Military Threat**

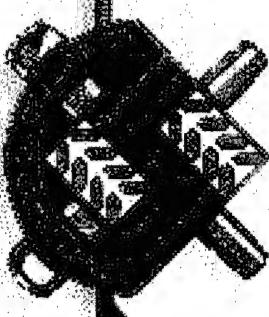
- Regional Conflicts
- Proliferation of Chemical/Biological/Conventional Arms

- **Changed Military Tactics/Strategy**

- US Forces Will Be CONUS-Based
- Light, Deployable, Lethal Forces
- Emphasis on Deep Strike, Early Entry Forces, Real-Time C4I

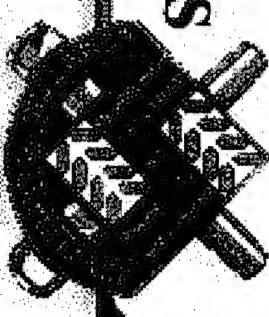
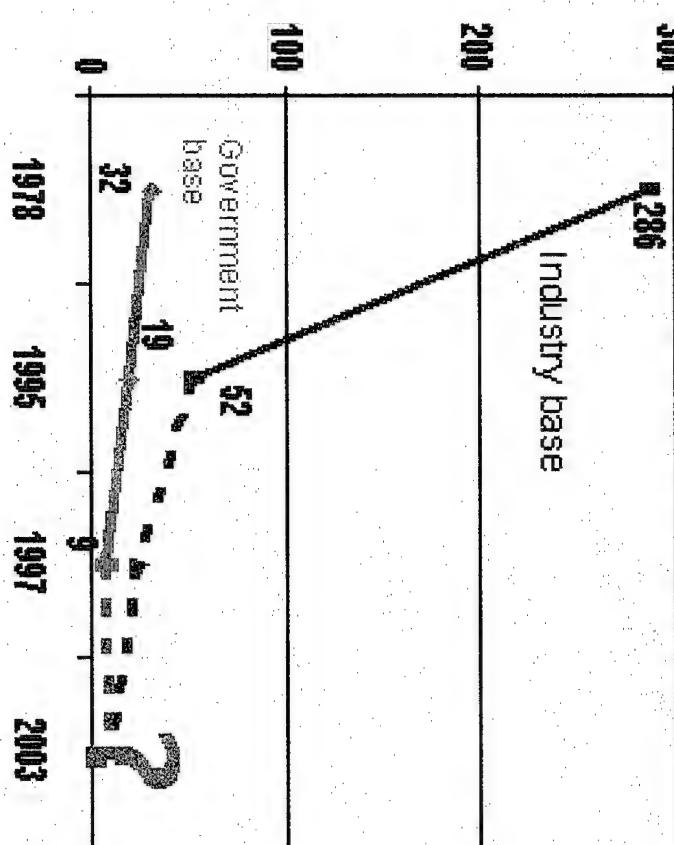
- **Smaller Army**

- More Lethal/Survivable



# ★Ammo Base Organizations

## ARMAMENT INDUSTRY

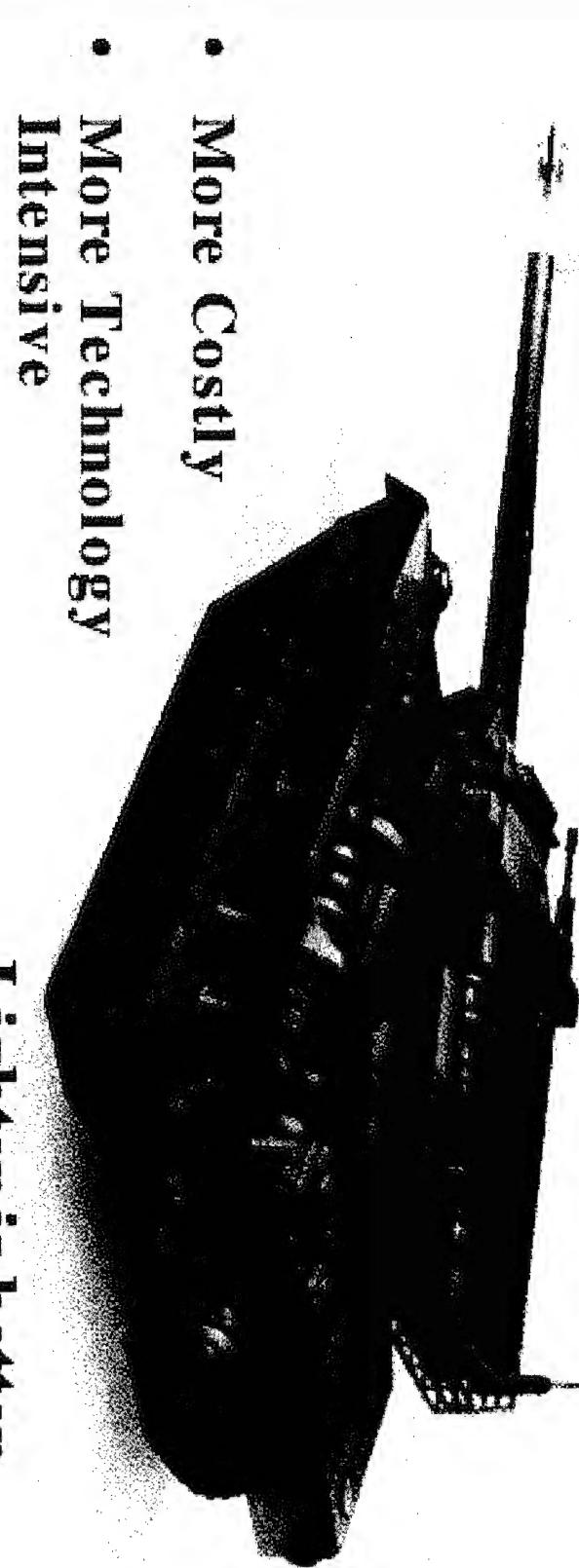




## Changes in Ammunition Requirements

- Highly Specialized
- More Sophisticated

Next to fuel, ammo is the largest tonnage on the battlefield...

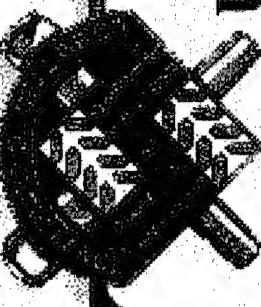


Lighter is better

- More Costly
- More Technology
- Intensive



## Ammunition Acquisition Reform



- Army XXI Reinvention Laboratory
- Cost Reduction and Reinvestment Initiatives
- PEOs and Major Commands required to focus on Management of Total Life Cycle
- Modernization Through Spares Initiative
- Army Purchase/Credit Card usage
- Established a Paperless Contracting PM Office
- Single Process Initiative (SPI) implementation
- Past Performance Information Management System (PPIMS)
- DOD Standard Procurement System (SPS)



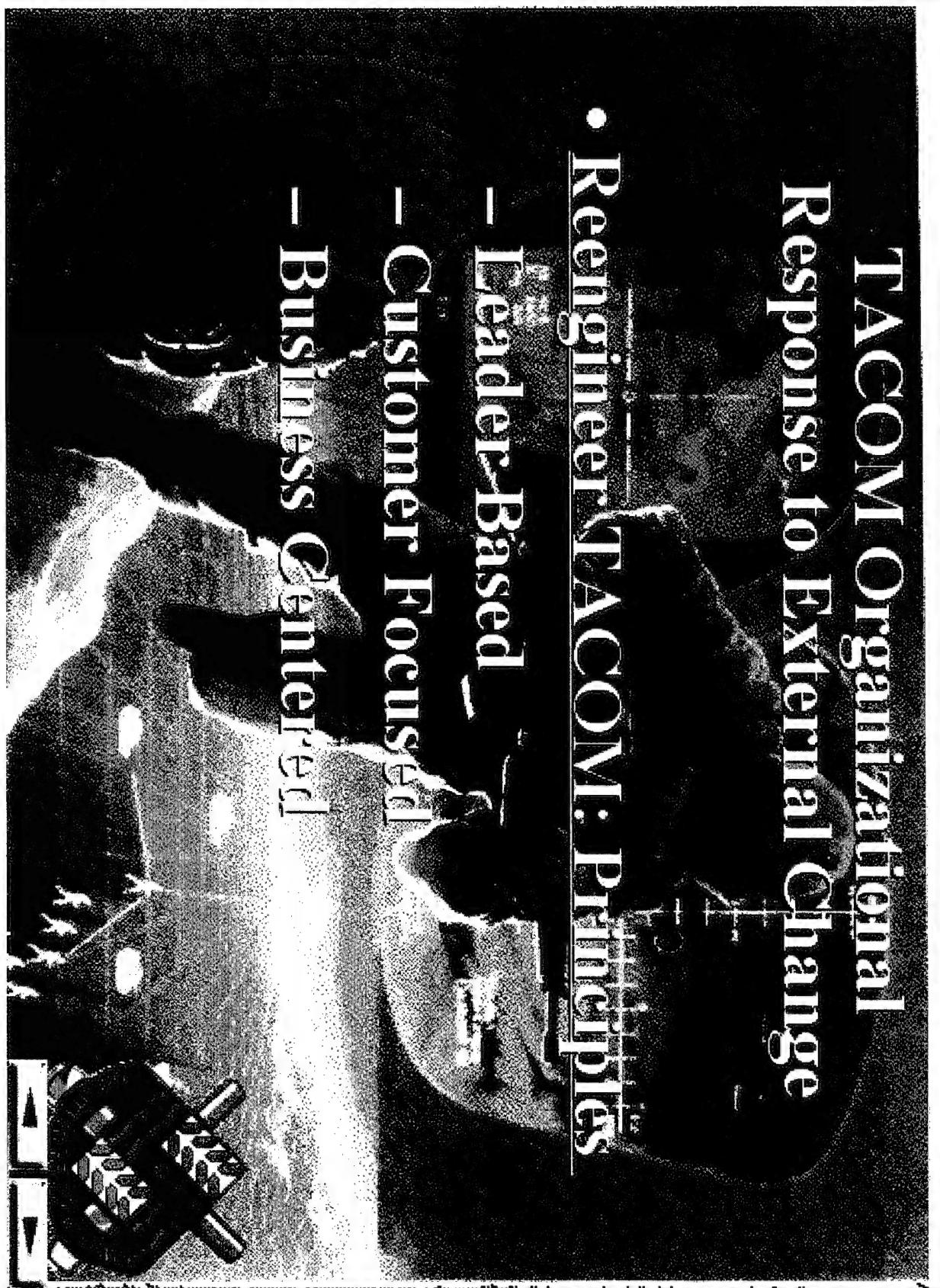
# Life Cycle Management



## TACOM Organizational Response to External Change

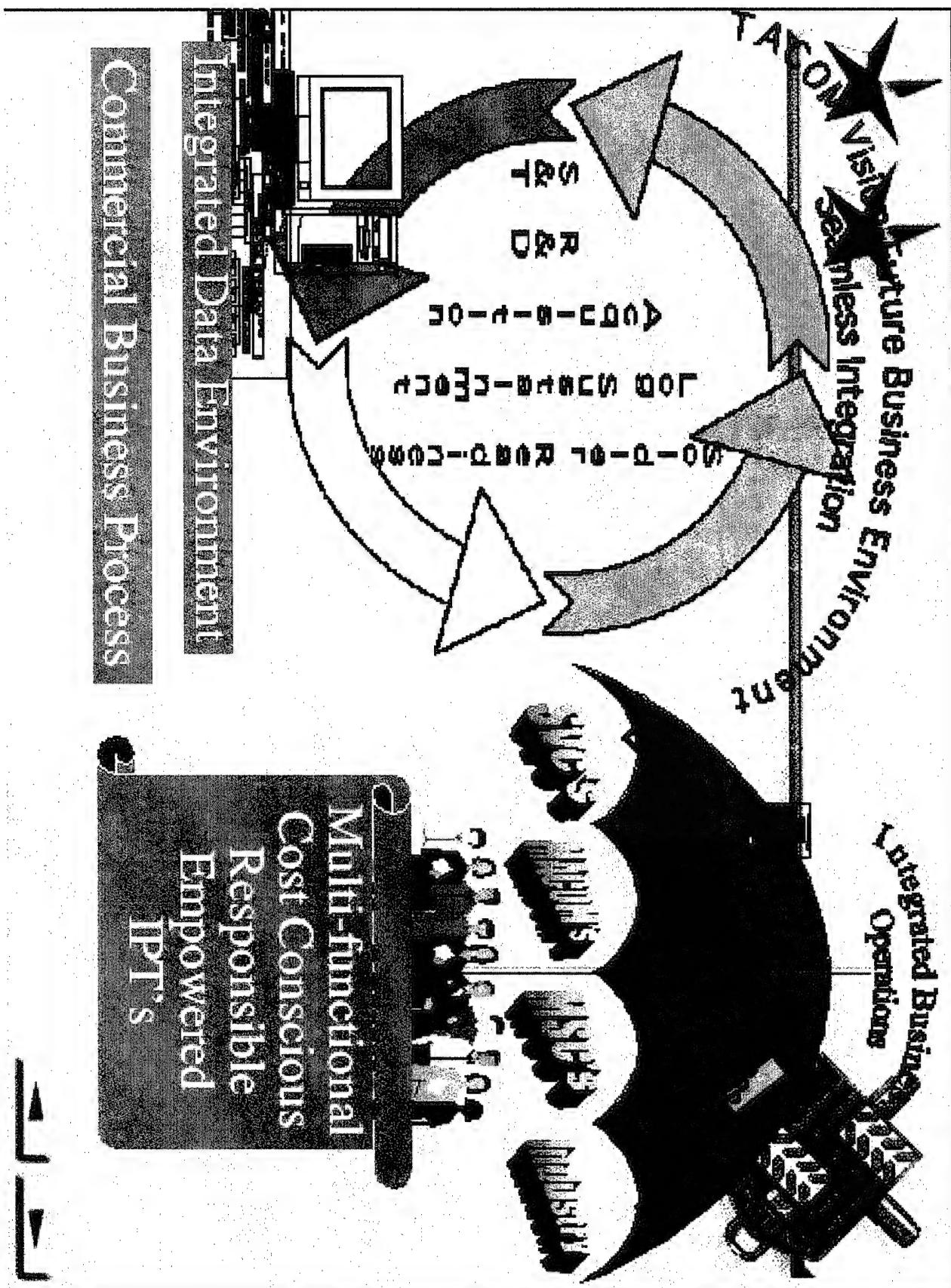
### • Reengineer TACOM: Principles

- Leader-Based
- Customer Focused
- Business Centered

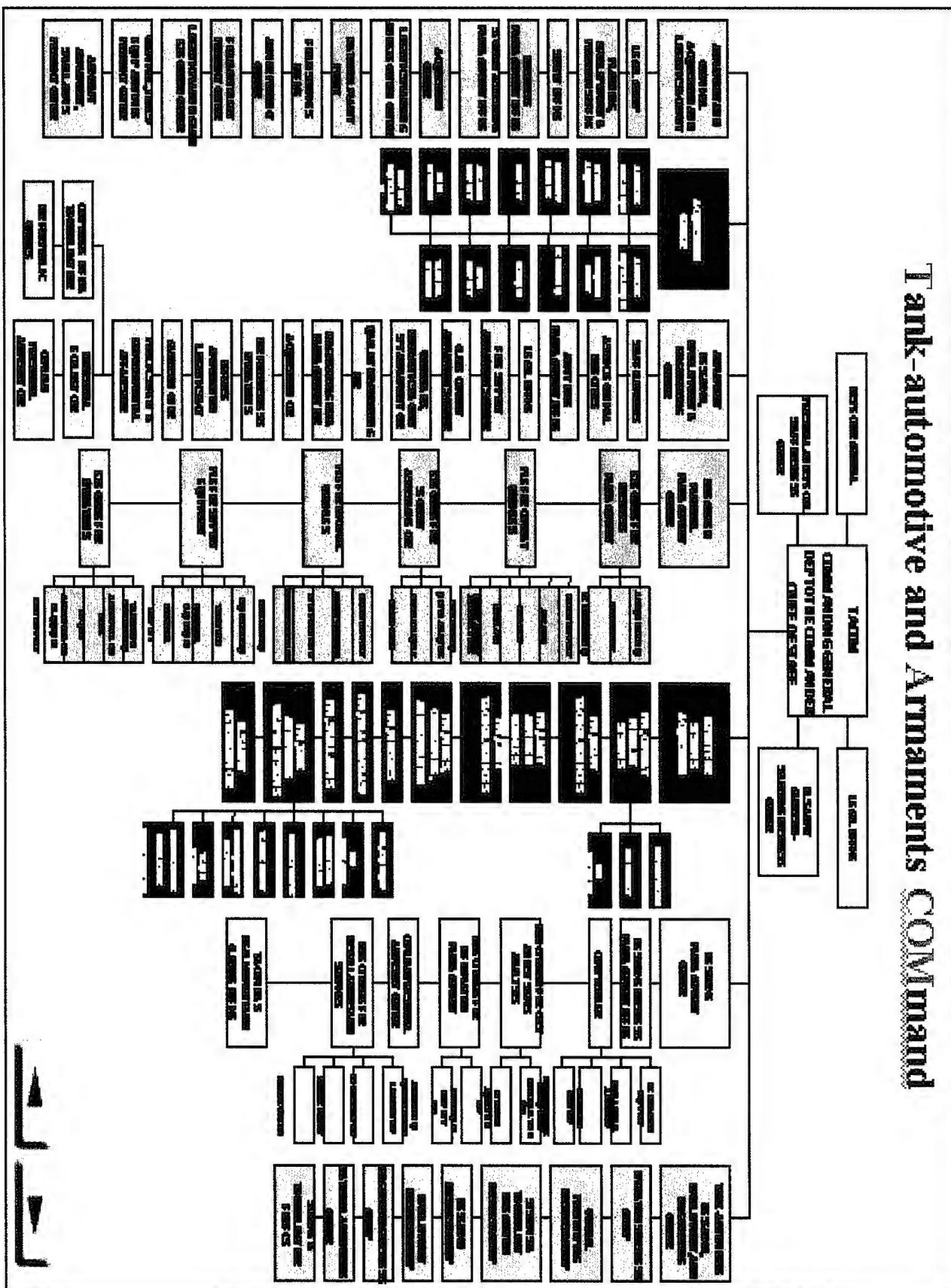


# Where We Need To Go

- Multi-Functional Work Force
- A Growing, Learning, Teaching Organization
- Fully Integrated Data Environment
- Fully Integrated Business Environment
- New Organizational Structure

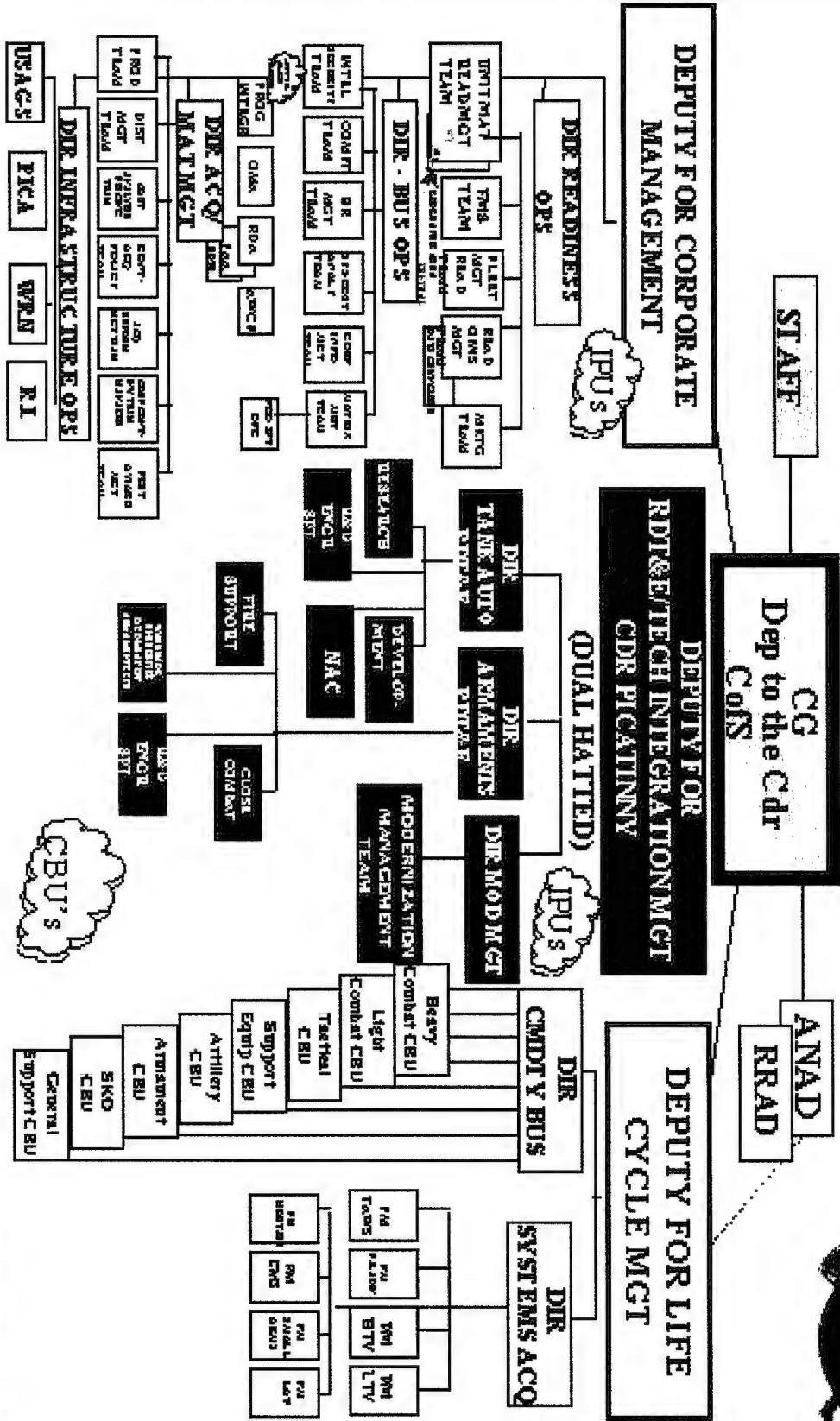
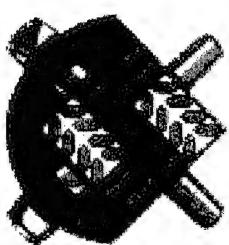


Tank-automotive and Armaments COMmand





## TACOM of the Future (Concept)



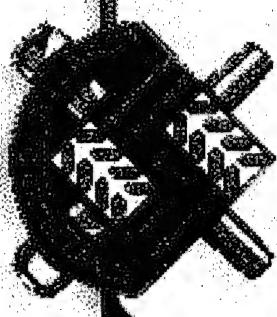


## Integrating ARDEC With TARDEC: Synergy

### Key Areas

- Tech Base
- ASCO
- TC, Material Release, Environmental
- Life Cycle Software Engineering
- Tech Data
- Engineering Support, OSCR, Modernization through Spares, Depots, DCA
- Organic vs Matrix Engineering support
- Pollution/Corrosion Prevention
- Modeling and Simulation
- Strategic Planning
- Mantech
- Configuration Management
- Career Development
- CRDA, Dual Use Technology and Small Business Innovative Research
- CP2, Government Source , QSL

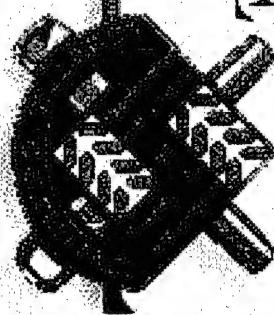
- No
  - Relocation of human resources
  - Homogenization of organizations
- Yes
  - Harmonization of business processes





## The Future TACOM RDTE Challenge

CSA rep AAN = "Knowledge and Speed"

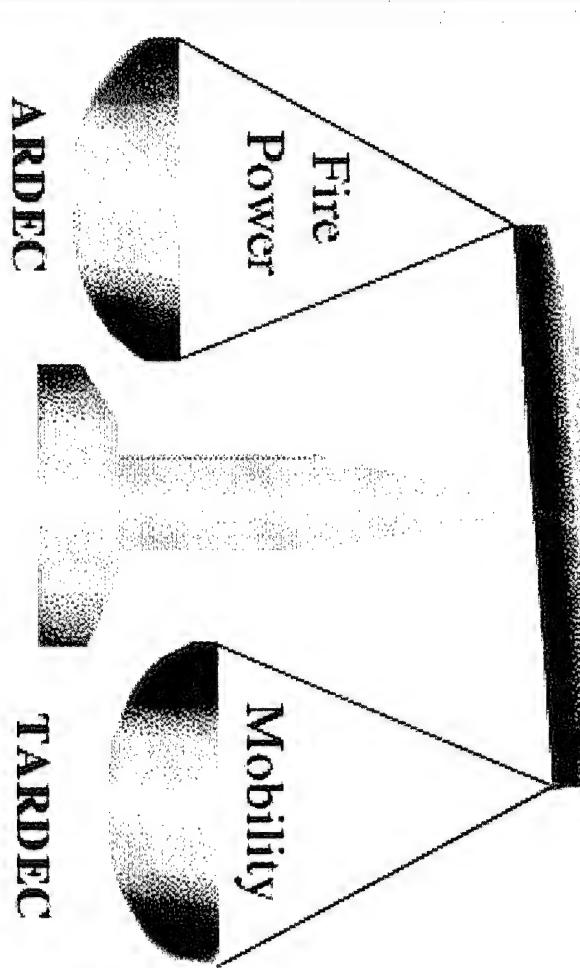


Find the Balance

Balance = Integration

### Modeling and Simulation

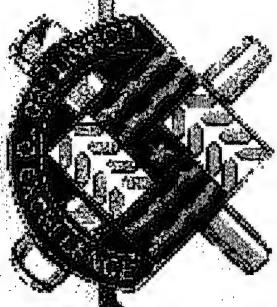
- User Requirements range, speed, lethality, etc
- People Skills
- Electronic Data Management
- Fire Control + C3I





## Multiple Ammo Integration Levels

- Air Land/Army-Joint Services
- TACOM with Industry
- TACOM with Ammo Community & PMs
- Ammo with Weapon System

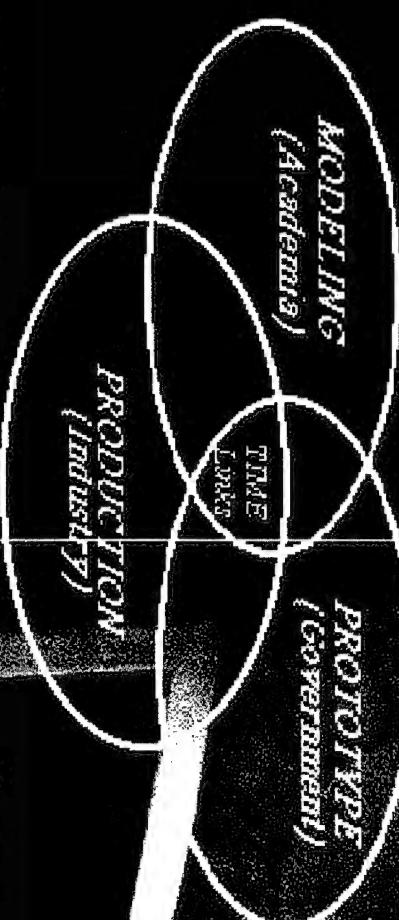


Many Players and Multiple Dimensions



## Integrating with

# Totally Integrated Munitions Enterprise (TIME)



- Integrating the combined capabilities of Industry, Academic and Government, Revolutionize the industrial base for a virtual enterprise.
- Technically advanced manufacturing processes
  - Innovative product development
  - Modern management practices

Integrating  with  
Totally Integrated Munitions  
Enterprise (TIME)



## Integrating Organizations with Mission and Processes

PEO-GCSS

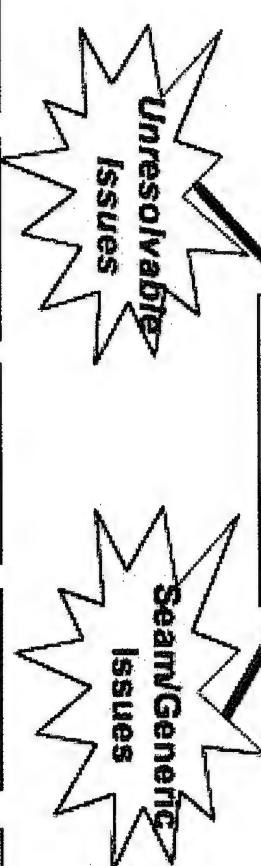


IOC

Ammunition  
Executive  
Council

Integration  
Office

TACOM



Artillery

Mortar

Small  
Arms

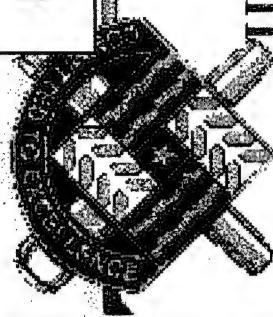
Tank

Mines

Fuze

Ammo  
Logistics

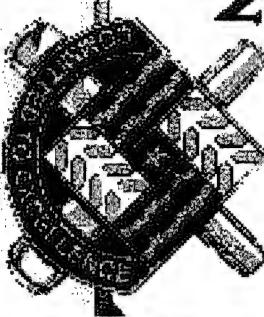
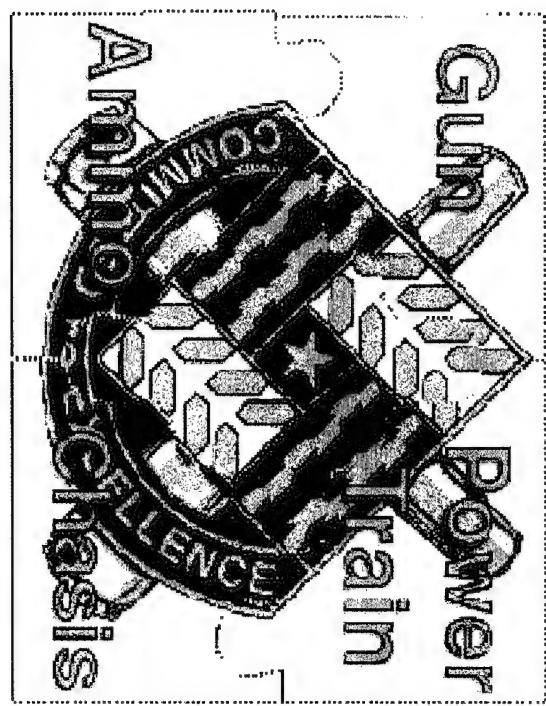
Business Case IPTs



## ★ ★ TERM SYSTEM INTEGRATION CONSIDERATIONS

TERM integration into M1A2 SEP requires harmonizing the following capabilities:

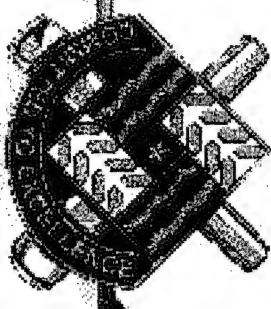
- Global Positioning System (GPS) and Inertial Measurement Unit (IMU)
- Turret/Hull position sensor and Hull Cant sensor
- Fire Control Computer software development/validation
- FBCB2 communication methods and protocols
- Crew interface for firing non line of sight missions





## Closing

### Critical to the future Warfighter



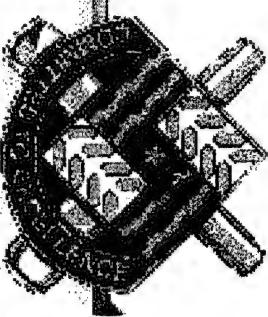
- **Integration of Ammo processes**
  - TACOM
  - Industry and the private sector
  - DoD
- **Major points:**
  - Smaller technology based Army
  - Ammunition is most critical commodity
  - Investment in technology to enhance: lethality, survivability, and producibility is essential
  - Integration of complex guns, ammo, & fire control technology into weapon systems is our core competency





## Conclusions

- Current business environment is effecting the ammunition business
- Meeting the mobility and firepower requirements of future warfighters will necessitate the systems integration of gun, ammo and platform technology
- The TACOM of the future is posturing itself to meet both the technology and business challenges of the 21st Century



# PEO GCESS OVERVIEW



16 September 1998

Presented by

**MG John F. Michitsch**  
Program Executive Officer  
Ground Combat and Support Systems

Munitions Summit

# Agenda

- Mission
- Organization
- PEO GCSS Focus
- Munition Programs
- Total Life Cycle Management Policy & Approach
- Our Role in Life Cycle Management
- Business Plans Considerations
- Advanced Warfighting Experiments
- Thoughts to Leave You With

PEO  
GCSS

# PEO GCSS Mission

- Provide Programmatic Oversight and Direction.
- Ensure PMs are Adequately Resourced.
- Enforce Program Baseline.
- Life Cycle Management
- Represent PMs with DA, OSD, Congress.
- Add Value to PMs' Activities by:
  - Providing Broader Perspective.
  - Integrating Across PM Lines.
  - Serving as an Honest Broker.



# Organization

APEOs  
Admin

— ★★

PEO GCSS

— PM  
Ground Sys  
Integration

SMP

▼ Maneuver Systems

Int'l Programs  
(FMS)

▼ Fire Support Systems

PM  
Abrams  
Bradley  
Medium  
Tactical  
Vehicles

PM  
Crusader  
LW 155

JPM  
PM  
Sense &  
Destroy  
Armor

XW982

Armaments  
& Resupply

Munitions

Mobility

M1A1

M2/M3A3

REMAN

C2V

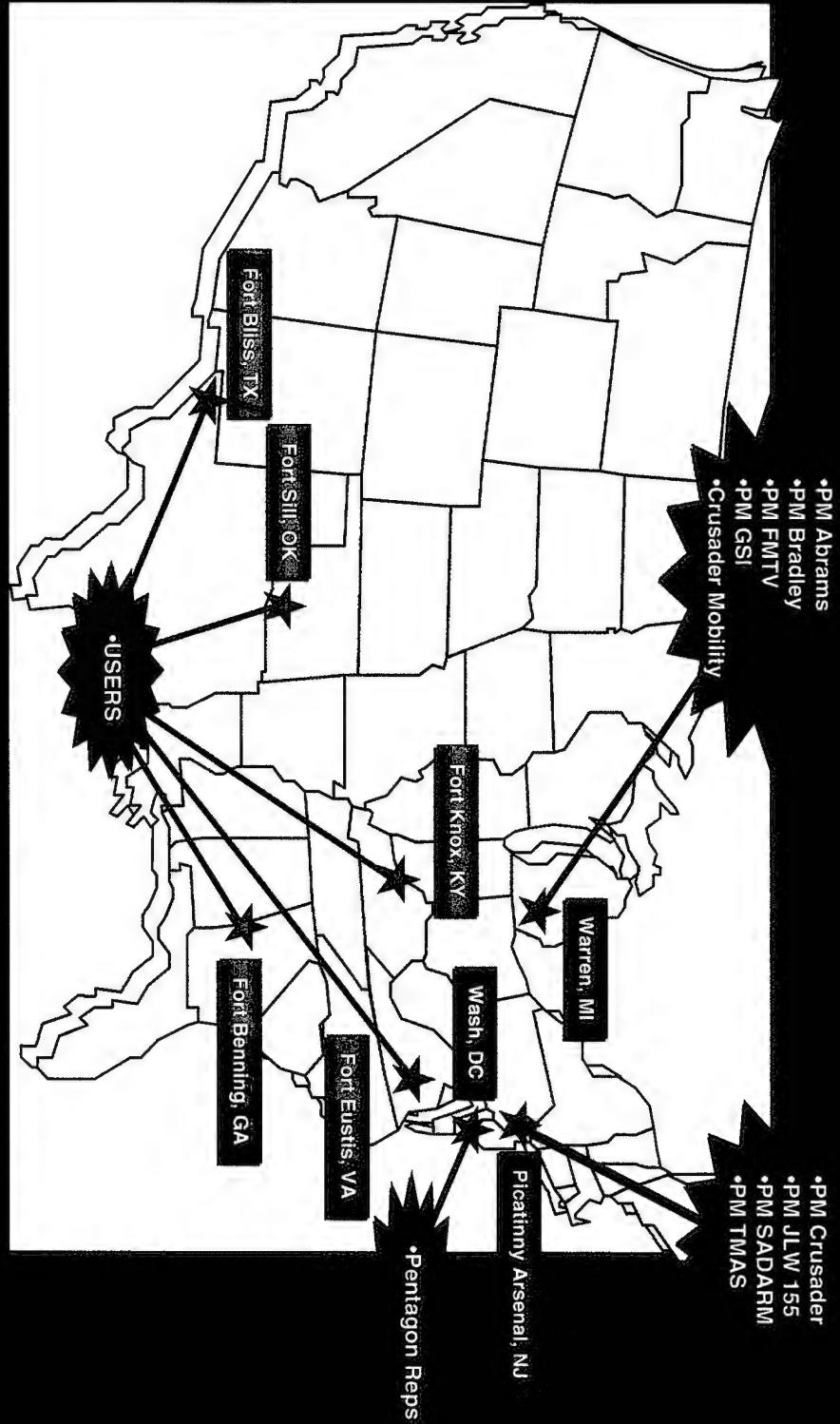
BFIST

Target Organization  
1 PEO  
8 Project Managers  
9 Product Managers  
304 Personnel  
\$17B (POM Budget)



PEO  
GCSS

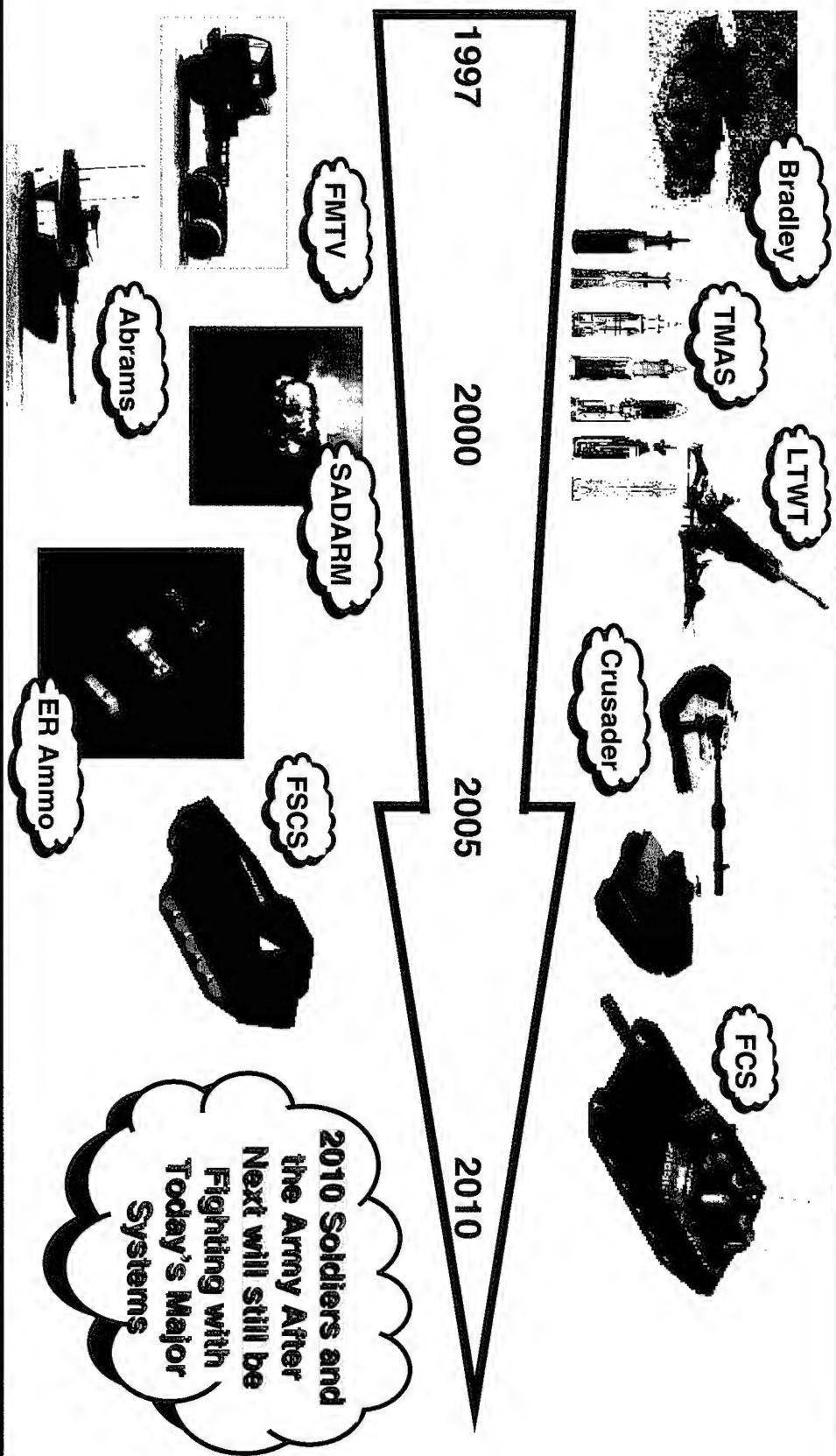
# Ground Combat & Support Systems Where We're Located





PEO  
GCSS

## PEO GCSS Focus





## PEO-GCSS Munition Programs

### GCSS

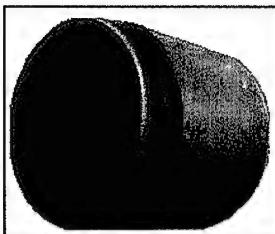
	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
MACS																		
RDT&E																		
PROD																		
MOFA																		
RDT&E																		
PROD																		
SADARM																		
RDT&E																		
LRIP																		
PROD																		
XM982																		
RDT&E																		
LRIP																		
PROD																		
M795																		
PROD																		
TMAS																		
M829A2/E3																		
RDT&E																		
PROD																		
TERM KE																		
RDT&E																		
M919																		
PROD																		

PEO  
GCSS

# Modular Artillery Charge System (MACS)

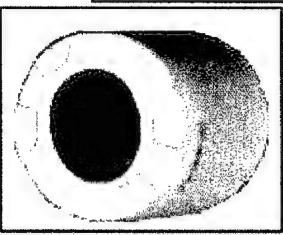
## CURRENT CHARGES

M2A1 (Green Bag)



XM231

M4A2 (White Bag)



XM232

TOWED



PALADIN



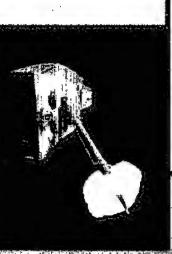
M119A2 (Red Bag)

M203A1

TOWED



PALADIN



CRUSADER

Soldier  
and  
System Friendly

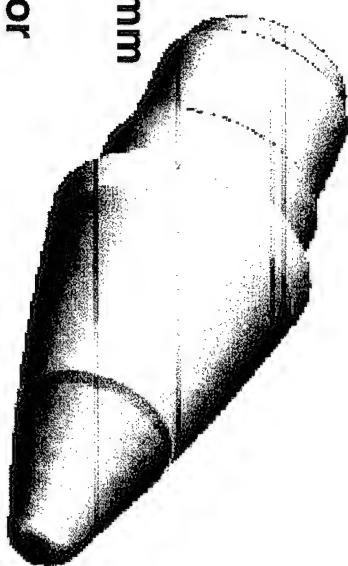
- Compatible With All 39-cal and ERO 155mm Artillery Systems:
  - Fielded: M109 series SPH, M198 Towed
  - In Development: Crusader SPH, JLW-155 Towed
- Automated Handling Compatible:
  - Distinguishable for Manual
  - Rigid Combustible Case
- MANPRINT:
  - Bi-Directional Igniter
  - Any Order
- "No-Excess" Propellant
- Cost Savings for Training & Operations
- Modular Charge System (MCS) for 155mm Artillery JBMou
- Milestone II 23 Sep 96
- Enter Production in FY2000



# Multi-Option Fuze for Artillery (MOFA)

## Performance Features

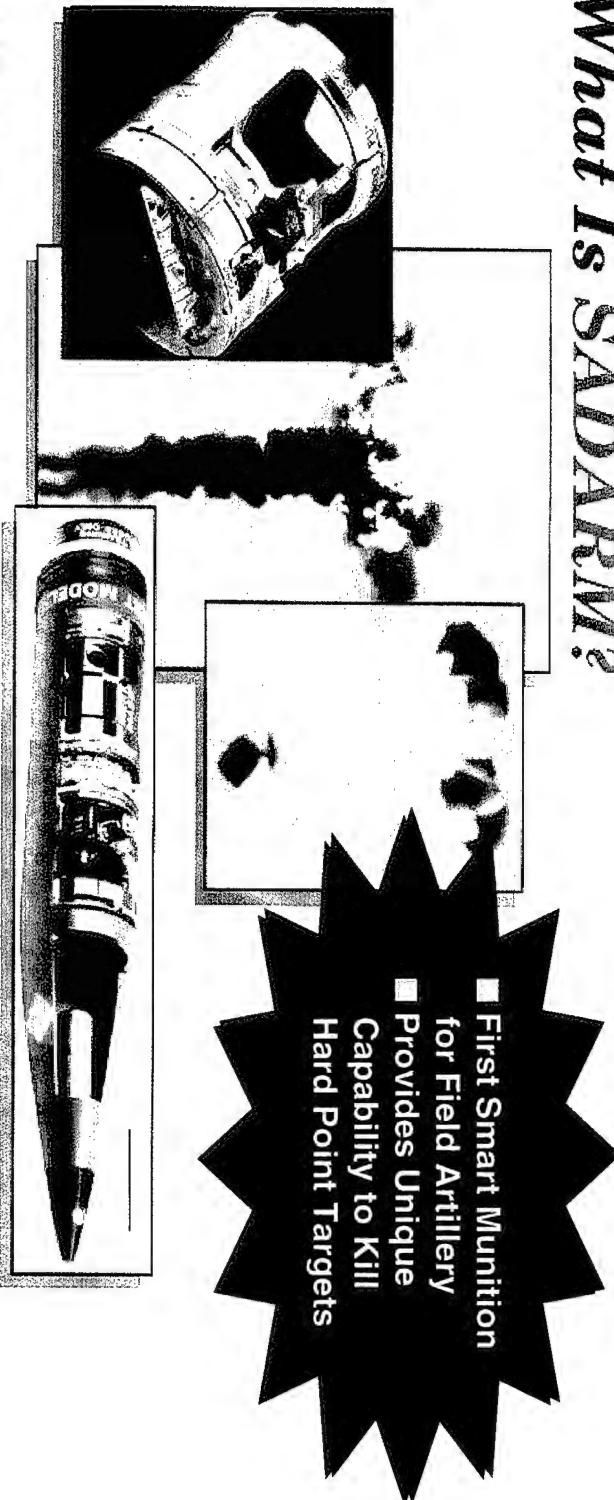
- Integrates Four Function Settings for Bursting Projectiles:
  - Proximity, Time, Point Detonating, and Delay
- Fuze Compatible with All Current 105mm and 155mm Cannon Artillery Systems
- Inductive (Man-Out-of-Loop) Setting Capabilities for High Rates of Fire
- Advanced Technologies Include:
  - Monolithic Microwave Integrated Circuit (MMIC) Chip, Patch Antenna, Harmonic Signal Processing, and Electronic Counter Measure (ECM) Chip
  - Successful Qualification Test - July 96
  - Pre-Production Qualification Test (PPQT) In Progress



PEO  
GCSS

# M898 SADARM

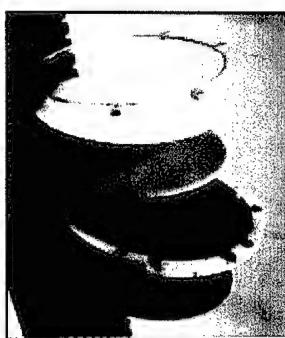
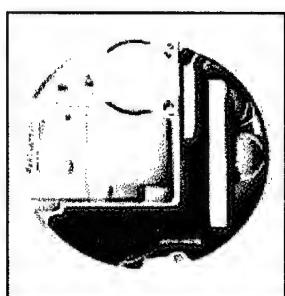
## *What Is SADARM?*



- **Multi-Sensor, Fire & Forget, Top Attack**
  - Counterbattery Weapon, Secondary Anti-Armor
  - Countermeasure Resistant
  - Explosively Formed Penetrator Defeats All Known Armored Targets From Top



# SADARM PI/COTS



## Objectives

- Reduce Submunition Unit Cost By 22%
- Eliminate Custom Components
- Insert Into Basic Production In FY02
- Increase Effectiveness

## Electronics Module

## Millimeter Wave (MMW) Assembly

FY98	FY99	FY00	FY01	FY02	FY03
	▲ M/S III COTS Development				
		PI Development	PI Qual		

## Linkage to Basic

- Parts for Qualification
- Support Personnel
- Working Both Programs
- Production Line Learning

- Fewer Parts
- Commercial Packaging
- Less Complexity
- Structural Improvements
- Avoids Parts Obsolescence
- Higher Yield MMW

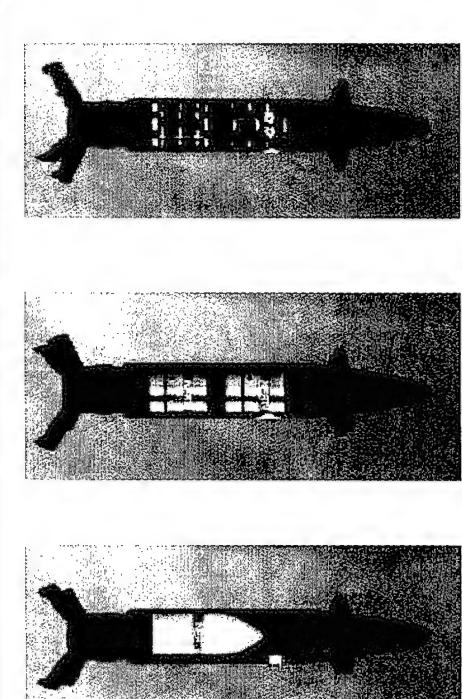
## Basic SADARM Production



# XM982 System Description

## Mission

- Provides the maneuver force with improved fire support through an Extended Range, fratricide reducing, accuracy enhancing, more lethal family of 155mm projectiles in support of Force XXI operations
- DPICM with 64 Submunitions
- SADARM with 2 PI-SADARM Submunitions
- Unitary with Bunker Penetrating HE Warhead



## Characteristics/Special Features

- Increased Range:
  - Paladin / M198 / JLW155: 28 to 37 Km
  - Crusader: 40 to 47 Km
- Increases Survivability Through Greater Stand-off Ranges

## Capability/Improvements

- Increased Range:
  - Paladin / M198 / JLW155: 28 to 37 Km
  - Crusader: 40 to 47 Km
- Increases Survivability Through Greater Stand-off Ranges

## Initial Operational Capabilities

- DPICM
- SADARM
- Unitary

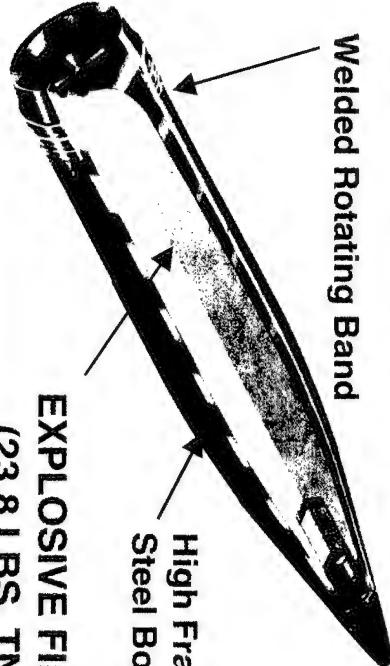
1Q FY04  
1Q FY07  
1Q FY08



# M795 System Description

Welded Rotating Band

High Fragmenting  
Steel Body



**EXPLOSIVE FILLER**  
**(23.8 LBS. TNT)**

<u>M795</u>	FY95	FY 96	FY97	FY98	FY99
<u>Quantity</u>	79,468	130,956	84,210	80,000	

**M795E1 is not Funded**

<u>Performance</u>	<u>M107</u>	<u>M795</u>	<u>M795E1</u>
•Weight (lbs.)	95	103	103
•Payload (lbs.)	15.0	23.8	22
•Paladin Range (Km)	17.5	22.5	28.5
•Crusader Range(Km)	17.5	26 to 28.5	34 to 36

Special Features

- Ballistic Similitude for M483A1 & SADARM
- M795 Compatible with M203A1 and MACS 6
- Significant Lethality Increase Over M107
- Personnel 1.5 to 2.0
- Trucks 1.2 to 1.8
- Hard Targets 1.0
- Train Like we Fight
- M795 Training Round (Proposed)

Delivery Data

Materiel Release 1QFY99

On Track



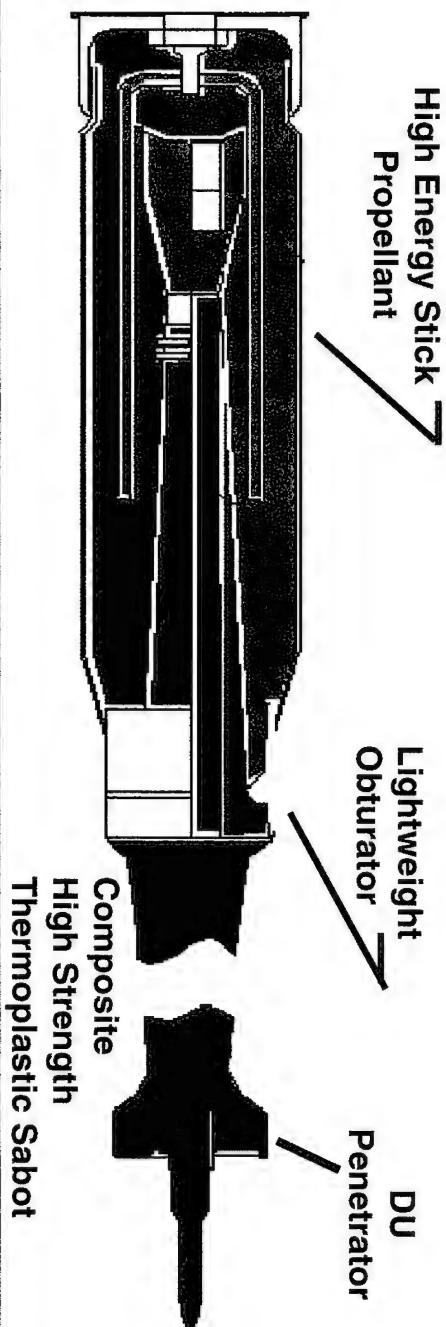
# M829E3

## ■ SOURCE SELECTION

- ORD & MSII Approved
- TEMP Signed
- Contract Signed
  - ATK Awarded Contract
- EMD Kick-off 21 SEP

OBJECTIVE:

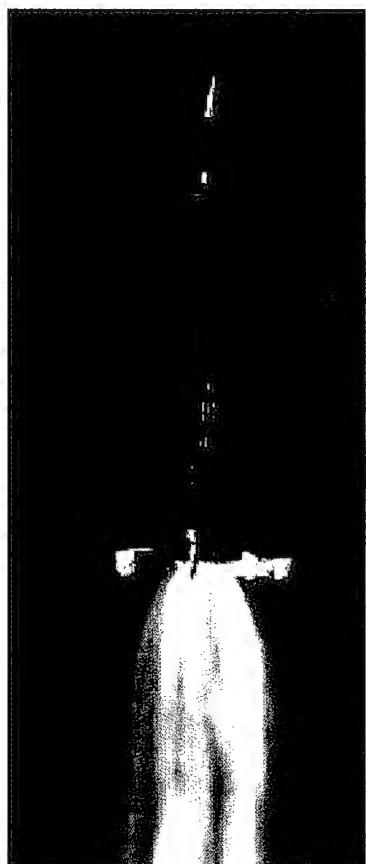
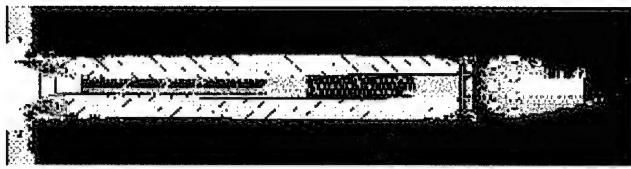
Conduct MS II Review 3Q98  
Award EMD Contract 4Q98





# TERM-KE

- Smart Tank Fired Munition
- Major components:
  - DU Penetrator
  - MMW Guidance
  - Rocket Motor Velocity Assist
- Congressionally Funded
- Competitor in Generic TERM Program





## M919 APFSDS-T 25MM DU Kinetic Energy Round



OBJECTIVE:  
Manage M919 &  
Develop M910E1

- Performance Spec.
- Primex is the Prime Contractor
- Production Restart Scheduled for Oct 98
  - Swiss Propellant Qualified
- Tracer Visibility Inadequate
  - 12 Month Tiger Team Effort Underway to Correct
- Production Limited While Tracer Fix is Developed



## Total Life Cycle Management Policy & Approach

- Why are We Involved in Life Cycle Management?

- PEO GCSS Approach to Life Cycle Management





## Management of Total Life Cycle - ACAT Systems

- PEOs, and MACOMs Who Manage ACAT Systems are Responsible for the Management of the Total Life Cycle Costs for these Systems.
- Minimize Estimated Sustainment Costs of Developmental Systems
- Reduce the Actual Sustainment Costs of Fielded ACAT Systems
- Prepare Sustainment Budgets for Each System



## Total Ownership Cost Reduction

- Vital to Realizing Modernization Objectives
- Element of Milestone Decision Review Process
- Top Ten Cost Drivers Identified
- PMs Have Begun Developing Strategies to Manage the Life Cycle Cost.

**The Challenge is to Reform "Traditional Practices" and Implement Measures to Ensure PMs can Manage the Total LCM of their Systems**



# Industrial Base Policy Letter 98-1, Ammunition

To the Maximum Extent  
Feasible, Transition  
Government Owned  
Assets to the Private Sector.

Develop Ammunition  
Family Plans

Rely on Private Sector to  
Respond to Production &  
Replenishment Contracts.

Manage Ammunition Using  
DoD's Life-Cycle Acquisition  
Process.

Use Acquisition Reform  
Initiatives.

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## Pacific Northwest National Lab (PNNL) Industrial Assessment of Industrial Base

Acquire Ammunition  
from the Commercial  
Sector

Life Cycle Acquisition  
Strategies Led by PM's

PEO

Management

Industry Focus:  
How to Meet the Needs  
Gov't Focus:  
Total Needs for Munition



## PM Life Cycle Responsibility

- The PM, or Their Agent, are the Wholesale Manager, Responsible from Milestone 1 thru Demil

Developing, Producing,  
Tracking, Storing and  
Distributing Munitions  
to the Field.

Maintaining, Upgrading  
and Resupply of the  
Inventory.

Demilitarization,  
Recycle and  
Disposal.





## What is the Goal?

- To Find Economies by Integrating Each Phase of the Life Cycle into One Strategy.
- Use Cost Savings to Promote Modernization.





## Implementation

- PM Charters then Chairs an Integrated Process Team to Develop the Family Acquisition Strategy.
- The IPT Develops Business Plans to Optimize Life Cycle Readiness by Integrating R&D, Technology, Industrial and Facility Planning.
- The PEO Integrates the Business Plans into one Economical Munitions Business Plan.





# Smart Munitions - Killing More With Less



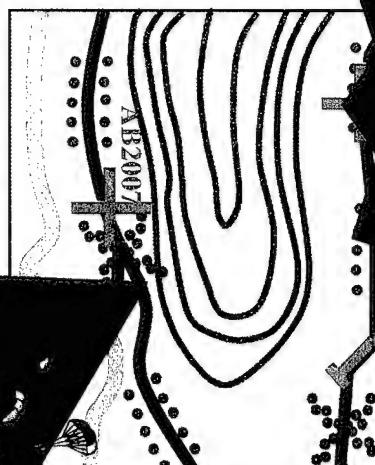
	<u>Fired</u>	<u>BDA</u>	<u>DPICM req'd (JMEMS)</u>
SADARM	220 Rounds	100 FV	3,600 Rounds
MSTAR	204 Rockets	35 Tanks	280 Rockets
		15 FV	60 Rockets
		52 Arty	<u>324 Rockets</u>
			664 Rockets



## SADARM Killer Team

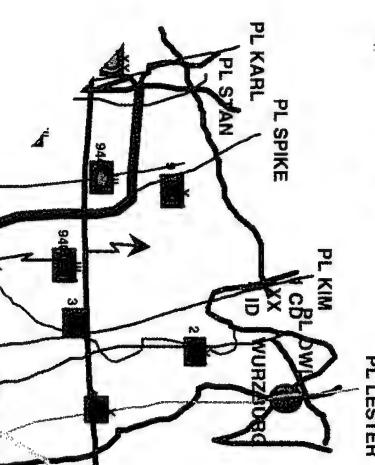
GCSS

Engineer Emplaced  
Raptor Minefields



Crusader Delivered  
SADARM

In an 8 Hour Period  
SADARM Munitions  
Destroyed Over 160  
Artillery, 200 Tanks, and  
260 Combat Systems.





## An Operational Concept for Shaping

- Operational Concept of "Find (Intel) - Kill (Fires) - Finish (Maneuver)" Validated in Various Simulations
  - Maneuvering to Exploit Effects of Fires Possible
  - Armor Formations Now Legitimate Target Sets for FA
- Division Effective in Optimizing Sensor-to-Shooter Linkages
  - Combined Arms Ambushes / SADARM Killer Teams Effective
  - Comanche-MLRS (Cmd and Atk Bn) Link Proven Winner
  - UAV Exceptional Targeting Platform
- SADARM and MSTAR Provide Capability to Strike Decisively Without Large Ammunition Expenditures

Artillery Accounts for  
40% of Division's Tank Kills



## Thoughts I Want to Leave You With

**PEO GCSS is Committed to Life Cycle Management**

**Providing the Latest, Most Lethal Ammunition to the Soldier**

**Using the Savings for More Ammunition Buys**

**Finding Efficiencies Through Industry/Government Partnering**

**Need Industries Help in How Best to Partner**  
**Need to Strengthen Communication**



1. *Chlorophytum comosum* (L.) Willd. (syn. *Chlorophytum capense* L.)

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# U.S. ARMY/GOVERNMENT PARTICIPANTS

Major General Charles W. McRae  
Commanding General

Major General Charles W. McRae  
Commanding General

Major General Charles W. McRae  
Deputy Chief of Staff, Administration

Major General Charles W. McRae  
Commanding General

Major General Charles W. McRae  
Commanding General

Colonel Maurice T. Sowle  
Commander

## INDIA MEMBERS

Major General Charles W. McRae  
U.S. Army (Res)

Major General Charles W. McRae  
U.S. Army (Res)

NDIA

Colonel Maurice T. Sowle  
U.S. Army (Res)

Major General Charles W. McRae  
U.S. Army (Res)

NDIA

# MEMBERS AND SECTORS

Dr. William J. Binkowski

★ Delmarva Maritime

Mr. Floyd A. McCabe

★ Pyrotechnics

Dr. Peter A. Balkowick

★ Propellants & Explosives

Mr. Kenneth R. Molesky

★ Wreckage & Recovery

Mr. Albert J. Calabrese

★ Maritime Technology

Mr. Charles R. Merges

★ Large Oilfield

Mr. Victor Giudagno

★ Systems

Mr. Michael S. Wilson

★ Maritime Caliber

Mr. Michael H. Long

★ GOO's

Mr. Rick Logue, Co-Chair, Ms. Bessie Kennedy, Records

TO THE

ICAO

# TOPICS DISCUSSED

- ❖ IMPROVING THE IMAGE OF AMMUNITION IN WASHINGTON
- ❖ GO-CO-GO CONCERNS FOR THE FUTURE
- ❖ ACQUISITION POLICY AND BUSINESS ISSUES
- ❖ INDUSTRY ISSUES/GOVERNMENT & INDUSTRY PERSPECTIVE
- ❖ PROCESS FOR EXPRESSING INSTALLATIONS
- ❖ AMMUNITION PROJECTION BASE ASSESSMENT

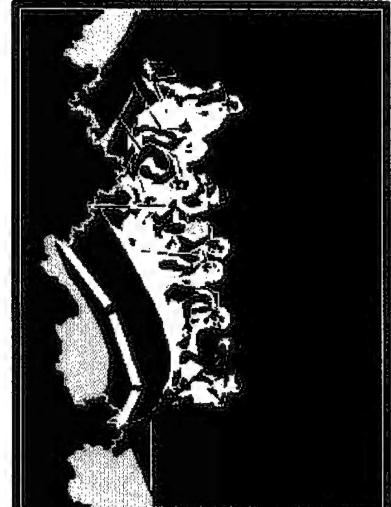
DATA

## Market Challenges



- Number Of Competitors + Amount Of Work + Capacity For Needs + Replenishment Needs + Desire For Multiple Year Contracts + Desire To Bundle + Requests For Direct Work - Industry Consolidation -
- + Vertical Integration + Strategic Planning + Full & Open Worldwide Competition + Low Price Awards - Concerns For Foreign Competition Equity - Strategic Business Units -
- + Studies, Studies, Studies - Political Help - Conflicting Objectives - Attractiveness To Commercial Companies - ROI Uncertainties
- Legal Paralysis - Cycle Time - Success Based On Votes + - Cost Of Compliance + Safety + Successful Defense
- Conversion + = Tilt

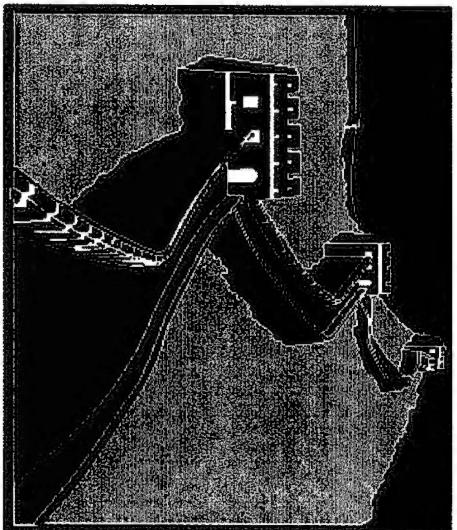
THE GOALS OF THE DRAFTERS OF THE CONSTITUTION



## WHAT IS THE EQUATION?

THE GOALS OF THE DRAFTERS OF THE CONSTITUTION

## Take Responsibility



- Clear Objectives + ~~Know~~ Desired Results + Way to Measure
- + Team Building + One Accountable Voice + Walk The Talk + ~~Take Ownership~~
- + Fix Problems Together + ~~Take Responsibility~~
- + Try It + ~~Take Some Risks~~ - Don't Go Over My Head + Tell Me The Whole Story - Don't Compete Just To Do It - Surprises + ~~Surprise~~ + ~~Surprise~~ + ~~Surprise~~ + ~~Surprise~~
- Communicate Success = Better Trust

# CONVENTION MAGIC

80%

64%

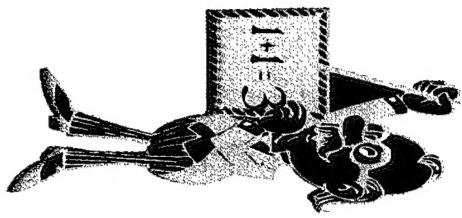
52%

44%

33%

20%  
REDUCTION

WHAT'S WRONG WITH THE EDUCATION?



WHAT'S WRONG WITH THE EDUCATION?

COMEDY

|| MUDGEE DELLER'S

EXTRAORDINARY PROJECT

## IS IT TRUE THAT

GOVERNMENT & CONTRACTORS WORK HARD TO REDUCE COST & IMPROVE INTELLIGENCE CIVILIAN CONTRACTING?

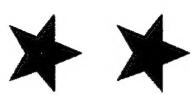
THEY IS A EASIER WAY TO COST REDUCTION GIVEN ANNUAL PROCUREMENTS T&Cs?

PRIVATE SECTOR IS ALWAYS THE RIGHT ANSWER?

PERFORMANCE Specs ELIMINATE NEED FOR OVERSIGHT AND PERSCRITIVE REGULATIONS?

ALL COST VARIABLES LIKE LABOR, BENEFITS, MATERIALS AND OVERHEAD HAVE AN EQUAL PROBABILITY OF REDUCTION?

MOST EASY OVERHEAD REDUCTIONS HAVE BEEN TAKEN?  
THE PNN RECOMMENDATION AND GOVERNMENT  
ORGANIZATION ARE THE ANSWERS?





## SOME FOUNDATIONS FOR CONTRACTS

- ❖ MUST MAKE PROFIT
- ❖ COMPETING OPPORTUNITIES FOR MARKETING DOLLARS
- ❖ BOARDS WATCH OUT FOR STOCKHOLDER INTEREST
- ❖ RISKY TO GUESS AT BUDGETS, CUSTOMER STRATEGY, QUANTITY OF EACH ITEM, AND IMPACT OF RESTRUCTURING

sketch

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